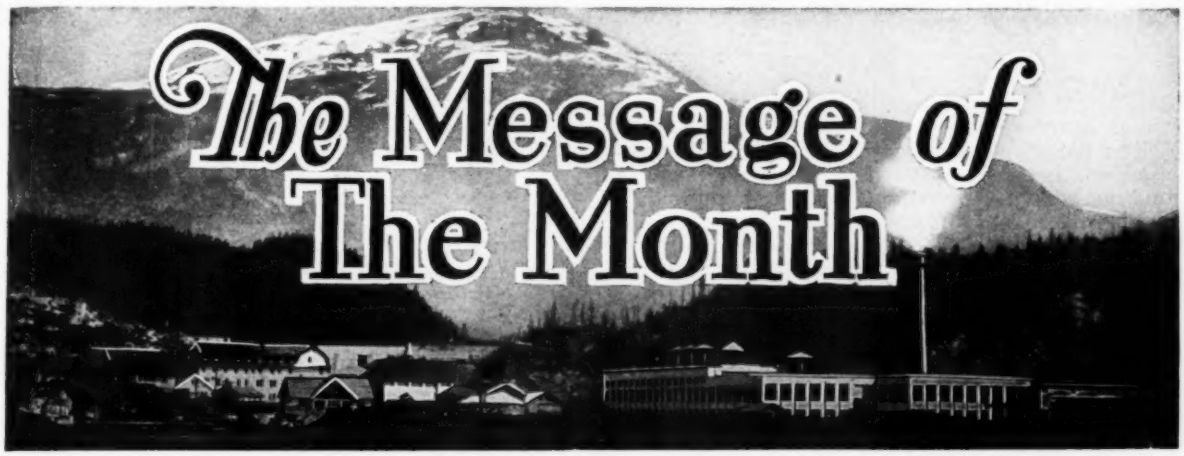

The Economic Opportunity of the Paper Industry

THE time has come to talk of helpful things and for the consideration of constructive policies, the promulgation of which throughout the industry will bring it back to sane and solvent operation.

The paper industry has suffered terrific monetary losses. It seems reasonable to predict that further financial losses are lying directly ahead of some of its divisions. However, the greatest loss from which the industry suffers, is the forfeiture of confidence on the part of merchants and consumers in the soundness of its policies and the total lack of confidence in the integrity of its price quotations.

The production policies of the industry have been opened to indictment for the past five years. Four of these years are what might be called the boom years. These were years of huge industrial expansion. Money was made easily. Credit was abundant and "great economic opportunities" were grossly exploited.

Promoters appeared in the paper industry. "A great economic opportunity" was presented in Canada whose large forests and abundant water powers constituted a mine of natural resources, just ripe for financial adjustment via the newsprint route.

Another "great economic opportunity" appeared in the South where large areas of southern pine and natural gas for power constituted a mine of natural resources, just ripe for development at seemingly extraordinarily large financial earnings via the kraft paper route.

Statistics in both cases were compiled to show that no overproduction existed.

Prospecti were composed which set forth a glowing array of facts derived from reliable sources (not specified) and believed to be true.

Investments were made and producing units were built throughout the expansion years.

Now, the industry as a whole is paying for the over-exploitation of these "great economic opportunities."

And the industry doubtless will continue to pay for sometime to come, for one of the outstanding pieces of news to be received last month was the cutting of the newsprint prices five dollars per ton retroactive to January first.

This action, it seems, would make newsprint $57.00 per ton delivered New York City, a price still approximately $15.00 per ton higher than pre-war newsprint prices.

While kraft paper prices advanced, they are still down to pre-war prices and this whole division of the industry is groaning under the burdensome loss of these low-price levels.

The query now going the rounds of the trade, is: how can the newsprint price be maintained at approximately $15.00 per ton over the pre-war prices, when kraft paper is selling down to pre-war prices and below?

Now, it appears that there is not a scintilla of doubt but that the development of the "great economic opportunities" for newsprint paper in Canada and kraft paper development in the South were, and are, real economic opportunities; but it also now appears that a "great economic opportunity" does not necessarily make an investment-dividend-paying business.

"Great economic opportunities" demand great economic leaders to profitably develop them. An economic leader is indispensable, for he knows

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and never transgresses the great economic laws which never vary.

The paper industry of the future will be operated on the basis of what the consumer wants, and not what the manufacturers want to produce.

There are plenty of men that still want to make horse collars and red flannel petticoats. However, an airplane cannot wear a horse collar and a modern dame shies at and would go into a tail spin at the thought of wearing a red flannel petticoat.

This is a consumer's market and a consumer era. They must both be cultivated assiduously. Our industry's principal trouble is **too many mills** and **too few customers.** A policy of less mills and more customers will mark the beginning of the upturn in consumption.

We need to rationalize our industry. We need a new type of management—a management which does not rely upon past achievements, but one which will substitute maintained quality at profitable prices against volume production at any old price; a management which will seek honestly to give the consumer what he wants when he wants it and in the spirit of the best possible service, as against producing a grade easily manufactured and loosely exploited.

Such management is the only hope of bringing to fruition "great economic opportunities," whereby the prosperity of the industry can be made permanent.

How to End This War

THE **Iron Age** recently published the following editorial which, we believe, is worthy of reproduction in this publication:

"Not all wars are announced by formal declaration. America has been at war for the past 19 months, although many do not know it. The casualties we have suffered in the great economic struggle have been 15 times as great as those that we experienced overseas in 1917-1918. At least 5,000,000 Americans have been rendered hors-de-combat in the struggle to make a living. This vast army is now undergoing economic hospitalization. Dole, or no dole, the rest of the nation must pay for taking care of this army of industrial disabled.

"In dollars, too, a depression can be as costly as war. The past 19 months have cost us nearly that many billions in depleted purchasing power. How can we make up for this huge loss?

"There is but one way to do it. We must win this economic struggle and then rebuild in the same way that we have always built.

"In wars between nations, the victory goes to the one which most effectively designs and uses the improved engines and tools of destruction. Economic wars can be won and rebuilding done only by most effectively using the improved machinery and tools of construction and production.

"It is futile to attempt to win this war by lessening the fighting power of our industrial army through wage reductions. That is not the way any wars are won. The thing to do is to give the soldiers better equipment.

"Fully half of our 20 billion dollar total of investment in manufacturing machinery and tools is obsolete today, regardless of its age. It is obsolete because design, invention and construction have produced more recent outstanding cost-cutting improvements.

"Replacing American industry's obsolete equipment with improved machinery and tools now available is the way to win this economic war and to rebuild prosperity. The resulting cost savings would run into billions, the investment would profitably solve the problem of the plethora of idle funds and reabsorb our surplus of idle labor. And American industry would be placed upon an efficiency level that would assure the continuance of progress for years to come.

"And the same strategy that would win this war for the nation will win it for the individual industrial plant."

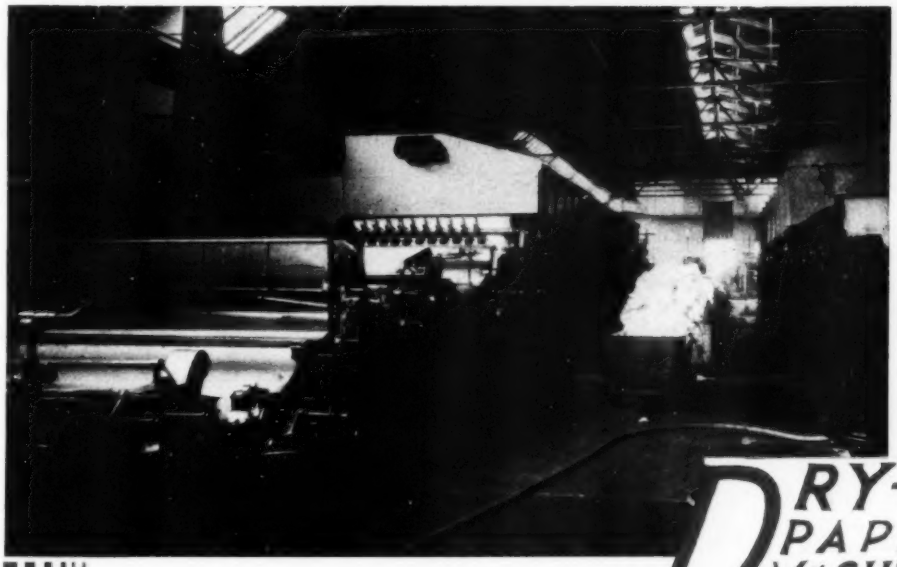
The writer of the above editorial was not thinking primarily of the paper industry, but had he known the industry thoroughly, he would hardly have changed one word in the editorial to make it apply to this industry.

A great deal has been published in recent issues of THE PAPER INDUSTRY on the subject of obsolescence. Statements have been made pro and con as to when a machine has reached a state of obsolescence. Some manufacturers seem to think it is not until the machine is entirely worn out—absolutely useless. But the above writer points out that over 20 billion dollars have been invested in manufacturing machinery and tools more than half of which are obsolete today. We quite agree with him and the conditions existing in this industry would substantiate his statement.

A visit to several paper mills recently revealed that much of the equipment in many of the plants was obsolete—in other words, one piece of good, new equipment could do the work of many machines now operating in these mills. The question of beaters drew particular attention. Some of these mills had a lot of 1,200 pound, 1,000 pound and some smaller beaters. Many of these beaters are doing nothing but consume power without doing very much work on the stock. The rolls were in bad shape, bars worn off and the edges turned over, and the bed plates were nearly worn away. These machines were taking several times the hours necessary to do the work they were intended to do. One good 2,000 pound beater could do the work of a number of such machines and would take only one motor and one belt. Just why the management and production men in the mills continue to run a beating engine with its bars worn off, the edges turned over, and consuming power at a loss, is hard to understand; and yet, the country is full of mills of that kind.

The same is true in the power plants of many of the mills. They need a doctor and need him badly.

There are many paper machines in operation today that have been running for 25, 30, 40 and 50 years—possibly more than that. Practically all these machines are obsolete. In other words, it is impossible for them to compete with the larger or faster machines except where, in some special cases, the cost of production has been cut down in other ways, or some specialty is made. In many plants the same is true throughout the entire mill. It is only natural that a manufacturer does not want to spend money during these times of depression as long as the mill will run without it, and when there is no profit; yet, if it is at all



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possible, now is the time to rebuild, overhaul machinery and add new equipment to take the place of that which is obsolete, so that when conditions do improve and orders are more plentiful, the mill will be able to turn out a real product and make a real profit.

Even if times were good and orders plentiful, mills in the condition just outlined could not expect to make much profit. Just as soon as conditions do improve, the average mill will then, no doubt, begin to think of fixing up the old equipment in the hope of getting more out of it and turning out a larger volume. This means a lot of good time wasted. All of this should be done at the present time when orders are scarce. Now is not the time to build new mills, but it is the time to rebuild and improve the equipment in the present mills in order that they may be ready for tomorrow's rush. Those mills that are preparing for the future will be the ones that will get the orders and make the real profits a little later.

In Touch with Progress and Invention

A CONSIDERABLE amount of space is given in this issue of THE PAPER INDUSTRY to an account of the exhibits of more or less papermaking interest made at the biennial exposition of chemical industries which held the stage at Grand Central Palace in New York last week.

There was a time when the growth of the dyestuff industry in the United States was featured at these expositions by imposing displays of coal tar derivatives, outrivaling those of foreign manufacture on which users of dyestuffs had been almost solely dependent prior to the World War. It was during this period that E. I. du Pont de Nemours & Co., the General Dyestuffs Corporation, National Aniline and Chemical Company and other manufacturers of aniline colors and dyestuffs made marvelously beautiful and imposing exhibitions of their products, for which one looked in vain at the thirteenth exposition.

It must be said that the promoters of the present exposition have accomplished great things in making the public conscious of the important part which developments in chemical engineering have played in the progress of national industries from the beginning of these great shows in 1915. There was a fair representation of industrial chemicals like heavy alkalies and some photographic chemicals, besides a few beautiful specimens of platinocyanides of the rarer earths and metals, but machinery and equipment, pipes and fittings, evaporators and process equipment generally formed the greater part of the articles on exhibition, so that instead of a chemical industries exposition, it might better be described as a chemical engineering or a process industries exposition.

Of pharmaceutical chemicals and medicinal products practically none were in evidence, and this, in itself, is a reminder of the extraordinary growth of the chemical industry in the United States which is now concerned with mass production of materials obtained by chemical processes, bearing no relation and hardly even suggesting the developments of a few decades ago when materials and products of chemical manufacture were predominating features, though some of the displays might have been identified to some extent in the public mind with the activities of the corner drug store.

The exposition was sponsored by a representative group of leaders in chemical manufacture and research, headed by Dr. Arthur D. Little; the American Chemical Society taking a large amount of space to demonstrate by means of enlarged photographic reproductions of the pages of its journals the part it has taken in the growth and development of the chemical industries in this country. Enlarged portraits of the trustees of this society were displayed prominently on the walls of the booth occupied by the society.

Besides the exhibits, the students' courses in chemical engineering given in connection with the exposition during the week was one of its most important features. This year, the lectures were crowded beyond the capacity of the lecture room, upwards of 100 undergraduates attending from Ohio State University alone. Enrolled for the lectures were advanced undergraduates, graduate students, and younger chemists who were still under training in chemical industry. In addition to Ohio State University, there were students in attendance from the Massachusetts Institute of Technology, University of Michigan, University of Illinois, Yale University, Pennsylvania State College, Mellon Institute and Cooper Union.

The value of expositions of this kind as a means of keeping men in close touch with what their industry is doing and also informed on progress in chemical apparatus, material and equipment is beyond question. Thousands of engineers, chemists and executives of the industries visited the exposition to compare competitive equipment which could be used in their plants, or to view the latest products of research and invention. While it is true, as mentioned above, that some of the industries represented by the exhibits were not themselves chemical in any sense, they are yet closely bound up with the chemical industries because of the essential equipment they produce and without which the science of modern chemistry could scarcely exist. This exposition reflected the utmost credit on its sponsors and managers, and provided an excellent illustration of the educational and economic advantages to be derived from a diversity of exhibits in an exposition designed for industries having a chemical foundation.

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Inspection of Materials and Workmanship

Supervision and Inspection Go Hand in Hand in Making Success or Failure of a Plant

By J. J. BERLINER, B. C. S.
Senior Member of the National Accounting System

MANY schemes for inducing the workman of his own volition to improve the quantity and quality of output have been tried with varying and partial success, but as yet no plan has been proposed which promises to obviate the necessity of supervision or to reduce the advisability of inspection.

Various plans of wage payment based upon quantity of production rather than upon the number of hours served have been effective to some degree in persuading the worker to increase his output. Mechanical pace setting and the line assembly have relieved the foremen in some plants of a part of their duties with respect to the quantity of production, time and motion study, and the resulting standard instructions in the most efficient method of performing operations has been useful in showing the way to the elimination of lost time and effort; but in all plants to some extent, and in small factories particularly, the responsibility for quantity and quality of output must be borne by the minor officers and cannot be shifted to the workman, assigned to mechanical agents, or trusted to system.

Supervision in a Small Plant

In the small plant there is greater danger of loose supervision and inspection than in the larger plant. Frequently, in fact almost generally, the foremen of the small factory are overloaded with duties and responsibilities. Not infrequently, they are called upon to plan and carry out the production of their departments, to stand responsible for the quality of the work, to give attention to the condition of the machine tools, to instruct new workmen and to lay out new work, and in addition, perhaps, to keep time on the operations performed by the workmen. Under such conditions he would be indeed a phenomenal man who could adequately fill the position. In the large mill or plant, supervision is usually functionalized; or at least there are special men assigned to inspection of work, to the maintenance of the equipment, to the instruction of new men and apprentices and to the shop clerical duties.

In one respect the small factory may have the advantage over its larger competitor. It is possible in the plant of moderate size for the manager to make his personality felt throughout the organization. If he is a capable leader of men his influence may be effectively extended into every department of the business and exerted upon every member of the force. The success of many small plants often lies entirely in the genius of a single man for leadership and in his power to get the very best out of other men. However, leaders are born no less surely than are poets, and the manager of exceptional ability is so rare that the smaller plant can scarcely hope to obtain one except by the merest chance and then it is not likely that it will be able to hold him after his qualifications become known. The great corporation can attract to its staff the best talent in the field and, naturally, the smaller concern must be content with men of lesser capacity.

The problem of supervision in the small plant is best solved by making it as nearly automatic as possible. An adequate planning system, by which the sequence of operations in each department is laid

out, relieves the foreman of a great burden. A suitable wage system, by which the worker is remunerated for efficiency attained, largely removes the necessity for constantly following up each detail of the work in order to insure production. The introduction of special inspectors to pass upon the quality of the work and to detect defective parts and materials not only relieves the foreman of a task with which he should not be charged but insures a better quality of product. The foreman must in any case take his part in the operation of the planning system, the wage system and the inspection system, but in case such agents are provided his work along such lines becomes automatic, his duties are clearly outlined and his time and energies are conserved for the more important functions of his office.

Putting Too Much on the Foreman

When the planning of the work is left to the department foreman, guided only by the most general instructions as to the output expected, as is the case in the majority of small plants, the department is either conducted at haphazard without plan and without system, or matters of equal importance are neglected while the foreman devotes his attention to outlining the work. Obviously, the department foreman is not in a favorable position to plan the work, even that which comes directly under his own supervision, as he cannot tell without extended consultation with the heads of other departments how the work is to come to him and how it may best be delivered to the next man in line. It is not infrequently found in the small factory that foremen spend a large portion of their time in the store rooms and in the other departments of the plant checking up materials and ascertaining how the operations in other parts of the plant will affect the work in their department.

Half a century or more ago foremen in many instances were selected as much for their physical prowess as for their mechanical ability. But the day of driving has definitely passed and at present it is the quality of leadership which is desired rather than the ability to enforce discipline through fear. The average man will do a fair day's work if he is consistently well treated, if working conditions are good, if the task is placed before him and if his tools and facilities are adequate. But, to secure a good day's work from the average man, something more is required. Driving was the expedient of a past day and a far from successful one. Leadership and instruction have been far more effective, and a well selected and equitably administered wage system is of the greatest assistance.

However, a wage system, no matter how effective in inducing a higher degree of individual efficiency among the workers, is but one factor in management and does not by any means solve the problem of production even as to mere quantity. The very first effect of the introduction of an improved wage system, which proves potential in inducing individual workmen to increase their output, is to unbalance production. Some men will put forth greatly increased effort with the promise of enhanced earnings while other men cannot be induced to improve their pace by the proffer of any reasonable reward. On some classes of work the pace is set by the man, and production may be doubled or trebled by a little instruction in improved method, accompanied by the offer of a bonus; while on other classes the pace is set by equipment, and the man can only improve performance to a limited extent by reducing his own idle time and by eliminating useless movements. It is evident that if one part of the plant is speeded up while another retains its normal gait, or if one workman is induced to produce an increased number of parts while another refuses to or cannot improve his performance, the first result will be to destroy the balance of the shop without increasing by a single unit the final production. Any economy which fails to show up in the income account is not a real economy and improvements in method and machinery which do not lead to a permanent increase in profits represent wasted effort.

Conflict of Authority

The most common weakness with regard to supervision in the small plant is that the duties of the several officers are not clearly and definitely outlined, which results in constant and embarrassing conflict of authority and persistent duplication of effort. Only too frequently the works manager in the small plant feels called upon to supervise in some detail the operation of each of the departments; many such executives in fact are excessively proud of the fact that their hand and eye is upon every activity. In attempting to supervise details which fall within the province of one of his subordinates, his ideas of the best method of conducting the work must be brought in direct conflict with those of the department foreman. If he uses his authority to overrule the plans and to correct the practices of his subordinate, he weakens the latter's hold upon his department, destroys his discipline and takes away his interest in and responsibility for the efficient performance of that section of the plant.

The most common fault with works managers in small plants is that they work too hard. They devote too much time and energy to solving problems of detail. They spend too many hours a day in and about the plant and become involved in a mass of unimportant detail while the larger matters of general plan and policy are neglected. It is a very easy matter for the mill executive to lose the proper perspective by being constantly enmeshed in the small affairs of everyday routine. The principal mill executive should spend some of his time in studying the methods and practices of other plants so that his

view of his own job may not become distorted by constant contact with its details and so that he may be in a position to note and adopt whatever practices he finds in other plants which are superior.

Factory executives are frequently heard to complain of the difficulty of securing competent men as department and sub-foremen. When analyzed, the difficulty is found to lie almost invariably not with the quality of the material available for the subordinate positions of supervision but with the chief executive himself. Not every good operative makes a good foreman; in fact, the qualities which insure efficiency in the worker are entirely different from those which make for competence in position of authority. The best foremen are frequently indifferent workmen, particularly in the matter of quantity of production. The man with the good head for planning and directing is irked by the monotony of oft-repeated operations and fails in efficiency where less capable men succeed.

Factors in Developing Foremen

The works manager who cannot develop competent men for the minor positions of supervision fails in one of the most important of his duties. When he is compelled to go outside of his own organization to fill vacancies in his staff of foremen he admits incompetency, and when he complains of inability to delegate authority and responsibility, he declares his own unfitness to direct the policies of an organization. The performance of every plant, large or small, will depend in large measure upon the ability and capacity of the chief executive. A competent man may be assisted by the presence of an adequate system of control, he may be fortunate in having exceptional human material of which to build his staff, but these things are only incidental to his success. Without them his administration would be efficient though perhaps not quite so successful. The incompetent man, on the other hand, with all of the advantages will have but a temporary success.

Hundreds of enterprises yearly join the list of infant failures, and in the majority of cases the difficulty and the whole difficulty lies in the fact that the business has been started by an inventor, a banker and a salesman and that no one realizes until capital is exhausted that a practical production man is as essential to the success of the venture as is power to the operation of machine tools. A product may have great mechanical merit, it may be readily saleable, capital may be available for experiment, development and exploitation, but unless provision is made for manufacturing it efficiently the project must fail. Modern manufacturing is a complex science and the inexperienced tyro can have no more hope of success in it than he would with corresponding preparation in any other business or profession.

In the great factory, functional foremanship has proved eminently successful, but in the smaller plant it is only infrequently possible to provide separate officials in each department to supervise the details of production and of plant and equipment maintenance. Ordinarily a single man must be responsible for production, for discipline, for speeds and cuts, for the proper repair of machines and care of tools and facilities and for the instruction of new men. The competent specialist is far easier to find than is the all around man sufficiently conversant with all branches of mill operation to fill the position of department foreman where it is not feasible to provide expert assistance in the handling of specific details. The problem of filling satisfactorily the supervising positions in the small plant is consequently more difficult than in the one of greater size and should be given correspondingly greater attention.

Selection of Department Foremen

Department foremen should be most carefully selected. The ability to lead men, to gain their confidence and respect, to maintain discipline without practicing severity is the prime requisite in a successful foreman. Mechanical skill is useful, ability to think rapidly and to plan accurately is a benefit, technical education is a decided advantage, but the faculty of leadership overshadows all other desirable qualities in the make-up of the ideal foreman for the small plant. Foremen are usually selected on account of length and faithfulness of service, for their superior intelligence, for unusual manual ability or for some other reason which has little bearing on their capacity to handle men and conduct a department. To the loyal organization the success of the business is preeminent and all personal consideration must be laid aside in the interest of efficient operation. There is no logic to the principle of seniority. The best interest of the employee is identical with the best interest of the employer and when workers insist upon promotion upon the basis of length of service, regardless of other qualifications, they jeopardize the security and desirability of their employment as well as the prosperity of the business and the success of their employer.

Necessity of Effective Supervision

After the best available material has been selected, the next step in assuring effective supervision is the provision of such simple systems as will relieve the foreman to as great an extent as possible of routine detail. The planning and scheduling of production is one of the most effective methods of lightening the burden of supervision, while at the same time it gives the works manager control of the plant without requiring him to spend valuable time in following up the details of work in all departments. A simple and equitable wage system whereby workmen are rewarded for the quantity and quality of work done rather than for the time consumed, is also a great assistance to supervision, while, if prop-

erly designed and administered, it automatically increases production and decreases costs. Standard instruction cards covering the operation required to complete each part and accurately prepared working blueprints are of the greatest value, as they eliminate wasted time and insure uniformity of method and results, while at the same time relieving the foreman of the necessity of repeatedly issuing detailed instructions.

Care of Machinery

The care of machines and tools is a task of the greatest importance and one which should be delegated to a person of special capabilities. Very few plants are so small that it is not economically feasible to employ at least one man to devote his entire attention to equipment, relieving the foremen of production departments of a duty which they have not the time nor usually the ability to handle in acceptable fashion. The neglected machine is not only inefficient in operation but it rapidly racks itself to pieces and soon gets beyond the point where it can be repaired up to its original capacity.

Quality of Work and Product

There is one important matter to which little attention is paid in the ordinary small plant and that is the quality of the work. This statement does not refer particularly to the quality of the finished product, but rather to that of the parts and operations. Every mill executive knows the effect of the quality of the product upon the volume of sales. Every article which goes out becomes an active salesman for the product yet to come. Quality in product is not entirely a matter of honesty but is equally one of good business. The clever advertising man can find a market for almost any conceivable article so long as the price is reasonably adjusted, but the best full-page spread which he may contrive will not interest the man who has once purchased the article and found it of inferior quality. The interest here is not, however, primarily in the finished product except insofar as accuracy in detail contributes to the perfection of the whole.

Department foremen should be held strictly responsible for the quality of the work and the very fact that they must carry such responsibility unfits them for the actual task of inspection. The painter of pictures is not a competent critic either of his own work or of that of another. The foreman strives for both quantity and quality of production. Quantity is easily measured but quality is a more illusive thing.

When the foreman is required to perform the duties of an inspector in addition to his other work, it is analogous to combining the bookkeeper and the auditor in one person. The auditor is not principally engaged to detect defalcations but rather to locate and correct errors and wrong practices. Similarly, the inspector checks the work of foremen and operatives to detect errors or omissions which might easily pass unobserved in the regular routine of shop work.

Inspection for Quality

Inspection for quality after the completion of all operations is valuable and necessary as it insures the reputation of the product and sometimes leads to the elimination of improper practices or to the substitution of superior for inferior materials, but the inspection which takes place before and during the processes of manufacture and which detects incipient losses is the procedure which pays the largest dividends.

It is not often possible for the small plant to functionalize supervision, nor to secure and hold the best type of men in its foremanships, but it can and should relieve the foremen and superintendents of duties which may be more efficiently performed by others, and leave the operating executives more time and less crowded brains for the performance of the more important duties of their positions, and it is also possible to make careful selection of the men who are to be trusted with authority. Not one man out of a hundred has the qualities of leadership, and when it is necessary to find men who have technical knowledge in addition to the ability to handle labor the task becomes indeed difficult. The mistake is frequently made of selecting the most expert workmen for positions of authority and responsibility. It may be stated as a general truth, though there are notable exceptions, that highly expert workmen or men of inventive genius do not make good foremen, or indeed good inspectors. The mechanic who possesses superior skill ordinarily is hypercritical of the work of others. His rigid standard of accomplishment, which few can fulfill, and his intolerance of work which falls short of perfection, unfit him to deal as a leader with his fellow workmen in such a way as to secure their full co-operation.

The quality of supervision determines largely the quantity of production in relation to the capacity of the plant, its equipment and force. The quality of inspection determines the perfection of the product in relation to its design. What is no less important, proper parts inspection intercepts wastes before they have become chronic and permits a degree of economy in the processing of manufacturing which cannot otherwise be obtained. It is obvious, therefore, that too much attention cannot be given to outlining an effective scheme of supervision and to the selection of the best available men as heads of departments and to the perfection of a plan whereby the inspection of materials and workmanship becomes a routine operation.

Co-operation is not a sentiment—it is an economic necessity.—Charles Steinmetz.

Current Thought by William Sibley

Our New Economic Environment

IN the Preamble of the Constitution will be found, in itemized form, the six basic principles of our republican form of government. The commercial progress which these principles have made possible—the profitable enterprise which has lifted the American people to a social level unparalleled in all history in less than 150 years—is now both confronted and confounded by a new, strange, and uncharted economic environment. This new economic environment is both little understood and much misunderstood.

In any attempt to analyze this new economic environment, or to appreciate its far-reaching effect, we must first understand that it has been brought into high relief only since the start of the recent World War, some 15 years ago.

Since 1917, the United States has changed from a seller of raw materials and a debtor nation, to a seller of manufactured products and a creditor nation. This is not to say that we no longer export raw materials. But it is to say that the sale of our manufactured goods has, since the war, assumed a steadily increasing percentage of our export total. Thus the above statement may truthfully be made.

This is largely because we have entered the period of transition which will change this nation from one predominately agricultural to one primarily industrial. No longer does 50 per cent of our population live through agricultural pursuits. No longer does 50 per cent of our national revenue come from the products of the farm. In contrast to all years prior to those of our grandfathers, the United States is now predominately an industrial nation, and **not** one of agriculture. And it is this change (comparatively recent, but now started never to be turned back) that has given rise to the distressed condition of agriculture. That portion of our farm population which is, at present, being squeezed hardest is squawking loudest. And we may with confidence expect that squawk to continue in ever increasing volume, since the "farm problem" we now have will continue until one-half or two-thirds of all existing farmers have been eliminated and agriculture been put on a systemized, industrial basis.

Already there are visible tendencies in that direction. The Aetna Insurance Company, I believe, took over some 50,000 acres in Indiana a few years ago (farms which were for the most part very poor producers) and brought that farm land to a high state of productivity and profit. Out in Montana there is a large corporation operating I-don't-know-how-many farms—all with a fair return. The farm corporation headquartered in Fargo, North Dakota, is doing a profitable business—in spite of present price levels. Another man, down in Kansas, claims to have perfected means which will permit him to raise grade A wheat at a cost of 10 cents a bushel. The many farms operated under Dowell in Champaign, Illinois, almost unanimously show a satisfactory return on the investment in money and time.

Until the greater majority of our 6,500,000 farms have been brought under the industrialized conditions of these isolated examples, however, we might better soon than late realize that as the English have had an "Irish problem" since the days of Elizabeth, so will we have a "farm problem" for generations to come. . . . . .And that on this "farm problem," many presidential elections will be won and lost.

Because of recent economic changes, no longer do the consuming nations depend on us for cotton, lumber, grain and other raw materials. Our raw materials, which formerly were sought, must now be sold. We must induce foreign nations to buy. The remainder of the world owes us a great deal of money; much more, in fact, that it can ever hope to pay in gold. This for the reason that, practically speaking, it has none, since we have most of it. Our surplus products are in such wide variety and of such unprecedented volume that we have checked importations in many directions by the institution of high tariffs. Thus our debtor neighbors cannot pay us in goods what they are owing, nor create new credits against which to buy our offered surplus. For this reason, the consuming nations have quite naturally turned for their supplies to those nations which will take manufactured articles in exchange or in payment.

This is the change in our world status which is right now commanding the deepest-going, farthest-visioned thought of our leaders. This is the altered economic environment in which Americans now find themselves. It is this changed condition which, unsolved as it is, is largely responsible for the current world-wide depression; which in spite of Pollyanna prohecies seems not to be abating. The people of the United States are met squarely with a set of entirely changed economic conditions. And these conditions demand the development and inauguration of equally new, but sound and enduring policies.

Thus far, however, we as a nation, have failed squarely to meet the new issues. Instead, we think in terms of evasive theories, and permit Congress to enact vicious tariffs and establish such economic fallacies as the Federal Farm Board.

The federal agricultural marketing act, and the inverse and transverse policies of the board under it; the vicious tariffs imposed against our most worthy customer—Canada; the failure to clean our banking system of its destructive and costly barnacles (not unlike the barnacles which attached the insurance business 30 years ago); the creeping advance of government into private business, and a multiplicity of other tendencies, are the result of a national state of mind.

We, as a people, have so long been accustomed to prosperity that we have come to look upon it as a birthright or racial heritage—an inherent characteristic that belongs to us and to us alone. We are wont to think of prosperity as something distinctly American and to be taken for granted, like apple pie, ice cream or corn pone. And having reached this state of belief, we are most unwilling to look the facts in the face. We don't want to know the truth unless that truth is complimentary to our commerical prosperity and our pocketbooks. We will not permit our editors or our economic services to prophesy a depression. Such prophecies, think we, stimulate depression and so we insist upon reading, thinking and believing only those who give voice to Pollyanna expressions. Such services as Babson, Brookmire, Bankers, United Business, Alexander Hamilton, et cetera, invariably suffer the loss of many subscribers whenever they have the temerity to prophesy a decline or a depression. As a nation we don't want our barometers to indicate anything but continued prosperity, and even refuse to look at the barometer when reverse indications are made . . . . . forgetting all the while that the able mariner, upon reading barometric indications of an impending storm trims his sails accordingly—without waiting to argue the point of whether or not the barometer can cause the storm.

We have so long devoted our enterprises to the fuller and fuller capitalization of existing opportunities that we can think only in terms of still further progress. Now and then, and here and there, appears the spasmodic expressions of some thinker about tomorrow. Ever so seldom some far-sighted editor hesitatingly expresses the thought that perhaps, somehow and eventually we may perchance reach the saturation point of production. Whereupon that editor is laughed to scorn and buried under a mass of statistics proving that production could yet be doubled and still not care for mere replacement requirements. Yet—here we are—in the midst of overproduction, which is little if any short of the meaning of saturation point.

So busy has the national mind been with things commercial and developments progressive that little previous thought has been given to the men we elect to our lawmaking offices. So engrossed have we become in business that less than 50 per cent of the enfranchised ever vote and the only people ever excited over an election are the candidates. Yet—here we are—turning to those legislative incompetents we have elected either through interest or apathy when trouble looms. And we are rewarded with new commissions, more bureaus, added departments, needless regulations, harmful restraints, poisonous prohibitions seemingly without end. The men we have elected to office give us political nostrums which do not and never can square with economic usage, largely because those men are incapable of producing any other kind of legislation.

Our public utilities are over-regulated. Commerce is over-protected. Our government is over-active in a wide compass of destructive directions. . . . . And very largely because of the same national state of mind which has brought practically all industry to a state of violent overproduction. We have too much legislation and not enough thought behind lawmaking. Too great is the percentage of tax revenues devoted to non-constructive effort and too small the percentage assigned to the development of new markets and the continuing of opportunities. Isn't it high time all of us began to think as a few leaders are now thinking, such as:

. . . . .the salesmanager who told me that of his 18,000 retail dealers, less than 4,000 did 85 per cent of his business, the remaining 15 per cent coming in dribs from 14,000 dealers. With the result that he is disenfranchising those 14,000, since to sacrifice the 15 per cent of his volume will actually net a gain to his company, for that 15 per cent, divided up as it is amongst 14,000 dealers, costs more to get than it is worth.

. . . . .the Canadian advertising manager for a large harvesting machine concern who assured me that out of 1931 will come definite knowledge of just which of the sales force to keep—and which to let go.

. . . . .the phonograph company executive who told me that in addition to closing one of his three plants (out of consideration for an impossible degree of overproduction in his industry) that he was sending three men into South America to open up new markets.

Isn't it time we devoted more money, science, research, and effort to building trade markets, improving quality, lowering costs (particularly of the products we sell abroad)—and cease the expenditure of money and energy in futile attempts to circumvent the immutable law of supply and requirement?

The Paper Industry Safety Contest

January-February-March Scores (Cumulative)

34 Mills Finish First Half of Contest

PERFECT SCORES
Division I — Paper and Pulp Mills

	ENTRANT	MILL	LOCATION
GROUP A	Spruce Falls Power & Paper Co., Ltd.	Kapuskasing	P. Q. Canada
	Kimberly-Clark Corp.	Falls	Niagara Falls, N.Y
GROUP B	Champion Coated Paper Co.	No. 1	Hamilton, O.
	Nekoosa-Edwards Paper Co.	Port Edward	Wisconsin
	Continental Paper & Bag Corp.	Rumford	Maine
GROUP C	Dells Paper & Pulp Co.	Eau Claire	Wisconsin
	Cornell Wood Prods. Co.	Cornell	Wisconsin
	Finch Pruyn & Co., Inc.	Glens Falls	New York
	International Paper Co.	Piercefield	New York
	Marinette & Menominee Paper Co.	Park & Victory	Marinette, Wis.
	Consolidated Water P. & P. Co.	Appleton	Wisconsin
	Bedford Pulp & Paper Co.	Big Island	Virginia
	Bird & Son, Inc.	Phillipsdale	Rhode Island
	United States Gypsum Co.	Oakfield	New York
	U. S. Gypsum Co.	Gypsum	Ohio
	U. S. Envelope Co.	Morgan Paper	Lititz, Pa.
GROUP D	Gardner & Harvey Co.	No. 2	Middletown, O.
	Continental Paper & Bag Corp.	Ashland	New Hampshire
	International Paper Co.	Livermore	Livermore Falls, Me.
	Gardner & Harvey Co.	No. 3	Middletown, O.
	U. S. Gypsum Co.	No. Kansas City	Missouri
	Hollingsworth & Whitney Co.	Madison	Maine
	International Paper Co.	Riley	Maine

IMPERFECT SCORES — Division I

	Key	Rank	Points Credit	Points Debit
GROUP A	PA- 7	3	864.048	
	PA- 3	4	616.560	
	PA-11	5	545.200	
	PA- 2	6	459.712	
	PA-12	7	373.696	
	PA-10	8	346.704	
	PA- 8	9	259.920	
	PA- 5	10		169.456
	PA- 4	11		808.928
GROUP B	PB- 4	4	911.184	
	PB-15	5	851.520	
	PB-24	6	820.208	
	PB- 2	7	741.856	
	PB- 1	8	736.240	
	PB-27	9	728.704	
	PB- 8	10	715.728	
	PB-30	11	707.472	
	PB-19	12	700.320	
	PB-14	13	611.560	
	PB-20	14	581.600	
	PB-25	15	555.952	
	PB-28	16	547.744	
	PB- 3	17	531.696	
	PB- 9	18	478.528	
	PB-23	19	467.232	
	PB-10	20	429.056	
	PB-12	21	427.760	
	PB-17	22	426.624	
	PB-50	23	325.024	
	PB- 7	24	131.648	
	PB-13	25	26.423	
	PB-21	26		131.776
	PB- 6	27		414.656
	PB-11	28		1269.456
GROUP C	PC-44	12	865.856	
	PC-24	13	757.456	
	PC- 4	14	756.032	
	PC-25	15	738.976	
	PC-20	16	661.952	
	PC-27	17	641.120	
	PC-49	18	629.696	
	PC-31	19	615.280	
	PC-33	20	499.088	
	PC-17	21	498.240	
	PC-48	22	472.576	
	PC-43	23	451.280	
	PC-15	24	383.216	
	PC-22	25	287.264	
	PC-38	26	214.720	
	PC- 5	27	204.352	
	PC-35	28	148.512	
	PC-18	29	147.776	
	PC-37	30		24.800
	PC- 1	31		37.600
	PC- 7	32		50.832
	PC-53	33		60.992
	PC-39	34		151.792
	PC-10	35		178.160
	PC- 6	36		195.520
	PC-12	37		336.736
	PC-42	38		380.944
	PC-14	39		443.744
	PC-40	40		463.376
	PC- 2	41		562.624
	PC-30	42		838.176
	PC-52	43		845.120
	PC-19	44		888.208
	PC-13	45		1754.528
GROUP D	PD- 3	8	308.416	
	PD- 2	9		38.656
	PD-10	10		5474.096

Division II

RA- 1	10	901.152	
RC- 5	11	733.008	
RC- 7	12	693.120	
RC- 9	13	654.352	
RC- 8	14	616.512	
RB- 1	15	448.704	
RC-11	16		242.528
RD- 4	17		417.568
RD- 1	18		1859.648

Reports not received—
Group A: 9 for Mar.
Group B: 22 & 26 for Mar.; 29 for Jan., Feb. & Mar.
Group C: 21 for Jan.; 41 for Jan., Feb. and Mar.; 8, 11, 26 and 36 for Mar.; 11 for Feb. and Mar.

Plans are rapidly taking shape for the Twentieth Annual Safety Congress, to be held at the Stevens hotel, Chicago, October 12 to 16. Tentative programs have been prepared by some of the sections, and hotel reservations are already being made through the business division of the National Safety Council, 20 North Wacker Drive, Chicago.

PERFECT SCORES
Division II — Remanufacturing

ENTRANT	MILL	LOCATION
Container Corp. of America	Sefton	Anderson, Ind.
Bird & Son, Inc.	Norwood Roofing	Massachusetts
Container Corp. of America	Charleston	West Virginia
Consolidated Water P. & P. Co.	Stevens Point	Wisconsin
Container Corp. of America	Cleveland	Ohio
Container Corp. of America	Natick	Massachusetts
Kimberly-Clark Corp.	Atlas	Appleton, Wis.
Container Corp. of America	Fairmont	West Virginia
Bemis Bros. Bag Co.	East Pepperell	Massachusetts

Fox River Valley and Lake Shore Safety Conference

A highly interesting program has been arranged for the Seventh Annual Fox River Valley and Lake Shore Safety Conference, to be held at Fond du Lac, Wisconsin, May 20.

The Pulp and Paper Section will meet at 2:00 o'clock in the afternoon with R. H. Knutson, Commissioner, Wisconsin Industrial Commission, Madison, as chairman. The following addresses are scheduled:

"The Foreman as a Safety Factor in Production," by F. J. O'Connor, Welfare Superintendent, E. I. Du Pont de Nemours & Co., Pennsgrove, N. J.

"Why Safety Must be Part of our Daily Tasks," by J. J. Plzak, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.

"Why Safety is a Paying Proposition," by W. D. Christian, Fort Atkinson, Wis.

A Tower of Safety

Imagine 4,500 men at work building a single edifice. One would think they would find it hard to keep out of each other's way.

Yet this is what has recently been happening in New York in the construction of the Empire State building, the highest skyscraper in the world.

It rises 1,248 feet above the street level and is 85 stories high. From the pinnacle one must look way, way down to see the top of the famous Woolworth building. And at the top of this new structure there is a mooring mast 200 feet high—a hitching post for the Zeppelins of tomorrow.

During the work the floors as well as the sidewalks around the building were wetted down and broom-swept almost hourly. There was no let-up in this clean-up work which followed on the heels of the construction men. Good housekeeping was emphasized from the start.

Enclosed elevators were used by workmen and the use of ladders was discouraged. Guard rails and many other safety appliances were placed everywhere. There was a catch-all apron running clear around the outside of the building on the 34th floor. Twelve stories below was a second one. An elaborate fire system was installed.

Four lunchrooms were in operation in the building while the work was going on.

Sixty-seven elevators will be required to transport tenants. It is claimed the new structure will house 30,000 people.

It is good to know that safety played such a prominent part in the erection of the world's highest structure.—**The Safe Worker.**

It is said that those who succeed are the ones who find a better way to do things. Observe the safety rules laid down for you, but if you think of a safer way, suggest it.

Penna.-New Jersey Supers Meet at York and Spring Grove

Visit Mills and Listen to Papers and Discussions Bearing on Mill Equipment and Problems of Manufacture

THOSE members of the Penna.-New Jersey Division of the American Pulp and Paper Mill Superintendents' Association who failed to attend the spring meeting of the division, at York, Pa., on Friday and Saturday, April 24 and 25, missed a great treat in mill and plant inspections and the benefits to be gained from listening to the presentation and discussion of papers on machinery and apparatus, in open session as well as round table discussions of queries.

Visits to Mills

The time on Friday was taken up with visits to the mills of the Schmidt & Ault Paper Company and the P. H. Glatfelter Company followed by a dinner in the evening. The first named mill, which is in the city of York proper, was inspected early in the forenoon, and following a luncheon meeting at hotel headquarters, the party was taken in motor cars to Spring Grove, distant some 12½ miles in a southwesterly direction from York, where the Glatfelter plant is situated.

For a paperboard mill, manufacturing mostly chip and news, with a capacity of 100 tons daily, the Schmidt & Ault plant is in many respects a model establishment, there being a notable absence of the dirt and disorder so characteristic as a rule of chipboard mills. Henry D. Schmidt, president and treasurer, is a Yale graduate and the mill is operated along modern lines with full attention given to new processes and improvements in manufacture. The representative of THE PAPER INDUSTRY was conducted through the mill by H. R. Serf, who pointed out the improvements and extensions made since the writer's previous visit ten years ago, chief among which is a new breaker system of the Shartle type. The mill is an old one, dating from 1851, which has been enlarged by the erection of new buildings to accommodate increasing business.

Glatfelter's Up-to-Date Mill

The trip to Spring Grove in the afternoon was greatly enjoyed. Accommodations were provided for the ladies of the party who were treated to a trip to Spring Grove and taken from there to the York Airport and the York Water Company impounding dam, their outing being brought to a close by a sightseeing tour of the City of York and vicinity.

Of special interest to the superintendents in attendance was a personally conducted tour of the P. H. Glatfelter Company mill, a plant that is known throughout the country for its modern improvements, being equipped with the latest inventions in machinery and processes and improvements in power plant design. H. M. Wilson, president of the H. M. Wilson Company, Philadelphia, who designed the power plant, gave a talk at the business meeting on the following day on economies effected in manufacture through the efficient use of steam. Pulverized coal is used for fuel in the new boiler plant, the pulverizers being located in the basement and the feeders on the firing floor, thus giving the plant an airy, roomy and well-lighted appearance. All firing is effected by automatic control, with forced and induced draft fans. The furnaces are equipped with superheaters and the boilers with econmizers. Steam at 350 lb. pressure is carried over to a 3,750 kv. a. turbine, extracting at 25 lb. back pressure, for use on the paper machine, evaporators, and process work generally. High pressure steam is also taken direct from the boilers and supplied to the plant through reducing valves.

The visitors to the Glatfelter plant were first conducted through the laboratory and water filtering building, where a typical installation of Norwood gravity filters having a daily capacity of 6,500,000 gallons was inspected. This water, after chlorinating, is also supplied to the borough of Spring Grove for drinking purposes. From the filtration

Pennsylvania-New Jersey pulp and paper mill superintendents and guests photographed

plant, the visiting superintendents were led through the various departments of the mill, inspecting in this way the wood chipping room, digester plant and bleachery, which latter is equipped with Belmers and the Wolf high density system. A new fourdrinier machine of Pusey-Jones construction was greatly admired. This has a wire 190 inches wide and is equipped with a Van de Carr stock inlet 30 inches high. The machine is constructed for a maximum operating speed of 800 ft. a minute on book paper.

The Cameron Roll Unloading Device

A Camachine 19 slitting and rewinding apparatus is used with the the new Pusey-Jones fourdrinier, and James A. Cameron, president of the Cameron Machine Company, who attended the meeting, demonstrated its operation. It has been customary to lift rolls off the drum and lower them to the floor by means of an overhead tackle, but, with the increase in width of machines and consequent increase in length of shaft and weight of roll, the shaft was prone to flex and the rolls to sway downward with it. The Camachine method is to roll the reel of paper forward and over the front drums, means being provided for lowering the rolls to the floor on an inclined plane with skids. Each skid, which is pivoted to brackets on the floor, has a cradle attached. The cradles are pulled up to the front of the winders and locked there automatically until the weight of the roll is placed on them when they slide gently to the floor.

On account of some undue strain during the demonstration one of the gear wheels broke and this made it necessary to resort to the older method of lifting the roll by means of an overhead tackle. Mr. Cameron explained that the gear which gave way was made of cast iron and that in future steel would be used.

Golf was played by a few of the members later in the afternoon on the links of the York Country Club, at 18-hole course. S. M. Hesser, of Hinde & Dauch Paper Company, Gloucester, N. J., won first prize in the tournament, second prize going to S. Carroll Wentz, of P. H. Glatfelter Company, and third prize to F. K. Becker, of Bird Machine Company.

An Enjoyable Dinner Party

E. C. Gildenzopf, chairman of the division, presided at the dinner in the evening, which was a jolly affair, thoroughly enjoyed by all. Song sheets were provided, and under the capable leadership of V. L. Sanderson, of the Terry Steam Turbine Company, everybody sang with a will, one of the songs "The Association Slogan" being repeated again and again. This was sung to the tune of "The Battle Hymn of the Republic," and ran as follows:

We're all good papermakers interested in the trade,
So we get together frequently to learn the progress made,
We are striving all the time to lower costs and raise the grade,
And we'll keep marching on.

CHORUS: Glory, Glory, Hallelujah!—etc.

Now at last the work is over and we've heard the dinner call,
We've assembled 'round the tables in this cheerful dining hall;
From the east, the west, the north, the south, we've gathered one and all,
And we'll keep marching on.

Another favorite was "The Superintendents' Story." In addition to these many popular airs were sung to musical accompaniment, Mr. Sanderson's daughter assisting at the piano. Both she and her father were praised and cheered for their share in the entertainment which contributed immensely to the success of the dinner party.

Welcomed by the Mayor of York

The members were honored by the presence at the dinner of the Hon. Jacob E. Weaver, Mayor of the City of York, who made a cordial speech of welcome and narrated some interesting points in the history of the city, which dates from 1741. It was the seat of the Continental Congress for a nine-month period in 1777-78. York became a borough in 1787 and 100 years later was incorporated as a city. It ranks fourteenth in population among the cities of Pennsylvania, giving employment to 20,000 workers, with a pay-roll of $21,000,000. He mentioned a number of interesting facts concerning the industrial development of the city and its civic organizations, and pointed with evident gratification to the American character of its citizens, which, numbering 70,000, has a foreign-born element of less than three per cent. In view of this, a strange thing, not mentioned by Mayor Weaver, is that the city lacks a free public library.

President Magnus Responds

Carl Magnus, president of the American Pulp and Paper Mill Superintendents' Association, who sat at the head table with the Mayor, thanked Mayor Weaver on behalf of the members for his hospitable welcome and most interesting historical account of the growth and development of the city which he had given.

The evening's entertainment closed with a moving picture

in front of the Glatfelter plant, Spring Grove, Pennsylvania, Friday, April 24, 1931

and talk by E. Peterson, of the Goodrich Rubber Company, on the cultivation of the Hevea rubber tree, the collection of its latex and the conversion of this into rubber and rubber belting.

BUSINESS MEETING ON SATURDAY

The business meeting on Saturday was opened by Chairman Gildenzopf who called upon V. L. Sanderson to present his paper on the steam turbine.

In Praise of the Association

In introducing the subject, Mr. Sanderson, who is sales engineer of the Terry Steam Turbine Company, complimented the association on its activities, saying it was an outstanding body among trade organizations, being designed very obviously for the advancement of papermaking and the promotion of good fellowship. Personal advancement did not dominate its activities and it met neither to discuss markets nor prices. The organization was unique for the hospitable attitude it displayed toward equipment and supply men and he expressed the hope that sales engineers and representatives would continue to merit the good will of the association.

Steam Turbine Development

Getting down to the subject of his paper, Mr. Sanderson traced the history of steam turbine development, which, he said, had been marvelously rapid since October 2, 1903, when steam was turned on the first turbo-generator set to be used by Commonwealth Edison Company of Chicago. This set is now a museum exhibit.

After noting that steam pressures had risen to 12,000 lb. and temperatures to 800 deg. and that metal is red hot at this temperature, he said it could be understood what turbine designers and metallurgists had to contend with. Steam turbines were now in use, said he, to exhaust for process work against pressure as high as 150 lb., with prospects of 300 lb. in sight.

Paper Industry Leads in Use of Steam Turbines—Mr. Sanderson said the paper industry had not been quick to adopt steam turbines, which could perhaps be explained by the circumstance that paper mills were built near streams where water for power and process was available. But the paper industry is now a leader in the generation of steam at high pressure, and steam turbines are generally used for main units and for auxiliaries. In a reference to conditions in older and smaller mills, he said:

"The smaller mills with less modern boiler plants could use turbine-driven auxiliaries, too. The same reasons which make steam turbines preferable in the modern plants apply to the older plants. Many of these are still using reciprocating feed pumps, yet the slop of leaking glands, the ceaseless job of repacking, the knock of loose bearings, and the night work and Sunday work required to keep the units in running condition are all too vivid in the lives of the men whose job it is to maintain machinery."

Some Applications of Turbo-Generator Units—Mr. Sanderson's paper was illustrated with pictures projected on a screen showing the various parts and connections of steam turbines. He gave details of the application of turbo-generator units with single motor drives in small mills. One mill in New England uses a turbo-electric unit consisting of one 175 hp. steam turbine, a reduction gear, one 100 hp. synchronous motor, one 40 kw. direct-current generator, one 22 kw. direct-current generator, and one 4½ kw. direct-current exciter. He asked his hearers to imagine this six-element drive equipped with pressure and electrical controls, the drive being paralleled with outside power for driving the synchronous motor when the steam demand decreased. He said that the synchronous motor became a generator and fed back into the power lines when the steam demand went up. The paper machine itself was driven by a variable-speed, direct-current motor.

Steam vs. Electric Drive—He also instanced a complicated installation in a mid-western paper mill where the steam turbine operates with either high pressure steam or low pressure steam or a combination of both. He made the point that electrical drives were complicated as compared with the steam turbine drive, which is simple, compact, easy to take care of and reliable. Nearly 100 steam turbines have been installed in paper mills, the applications being on every type of product from tissue to board. In proof of the statement that steam turbines for application to paper machines had kept pace with all phases of paper mill engineering, he stated that one large paper manufacturer had installed 12 turbine drives, showing a total rating of 5,175 hp.; the last two of this number were 600 hp. and the two that preceded them, 700 hp.

The reciprocating steam engine has become an old-fashioned apparatus, according to Mr. Sanderson, who advised replacing it with a steam turbine.

The paper was briefly discussed by Charles L. Ellis, William E. Wickham, Charles E. Kephart, F. C. Farnsworth and Chairman Gildenzopf.

After complimenting Mr. Sanderson on the interesting character of his paper, and before calling for the next item on the program, Chairman Gildenzopf announced the presence in the hall of Past President Fred J. Rooney and asked the members to rise in greeting.

Thoughts on Training and Education

Mr. Rooney addressed the gathering on the subject of education and training in paper mill work and made a comparison of the qualifications and capability of the so-called technical men with the practical men, whom he holds in better esteem. He said that the superintendents' organization takes a man and trains him in the school of experience. The technical man must have practical experience to be worth anything around the mill. The speaker paid his respects to the writer of an article in the March 26 issue of a trade paper, who had covered eight pages to demonstrate that the day of the practical man was over. All a practically trained man knew could be covered in a walk from the calenders back to the beater room, as this comprised his field of operations and training, according to the writer in question.

Defends the Value of Attendance at Meetings—Mr. Rooney denied the accuracy of the writer's statement, and outlined his idea of what education consisted. He wondered why every superintendent in the United States was not a member of the American Pulp and Paper Mill Superintendents' Association and urged all present to make a special effort to attend the annual convention in Dayton on June 4. He made an indignant protest against the insinuations of some chief executives of mills that superintendents who went to meetings did so for the whoopee parties held in connection with them, and impressed on his hearers the necessity of bringing back with them to the mills a good account of what they had learned from papers and discussions.

Motorization of the Paper Industry

The morning sitting was brought to a close with a talk on the motorization of the paper industry by O. C. Cordes, general engineer of the Westinghouse Electric and Manufacturing Company, who illustrated his subject with numerous projectoscope views of apparatus and their parts. After a comprehensive account of the construction of motors and drives, the varied applications of electricity in the driving of paper mill machinery were described in a most informing way by Mr. Cordes.

AFTERNOON SITTING, SATURDAY

The afternoon sitting was opened by Chairman Gildenzopf at two o'clock, when J. D. Miller, chief chemist of the York Haven Paper Company, was introduced to speak on corrosion problems in sulphite pulp as handled by the Materials of Construction Committee of the Technical Association of the Pulp and Paper Industry. He gave an outline of the subjects discussed by the committee, which was formerly known as the "Corrosion Committee of T.A.P.P.I." His principal object in appearing before the Superintendents' Association was to get the opinion of the members as to the advisability of sending out a series of questionnaires to the mills with which they are connected. The questionnaire would consider the various unit operations in pulp and paper mills and the points at which failures of materials were common. By materials he meant materials of construction in the manufacture of pulp and paper. The activities of the committee were confined in the early stages to sulphite corrosion but several metallurgical investigations were now under way,

with plans for the extension of the work to the non-metallic field. The committee was now considering materials of construction under two general heads (a) process materials, as digestors and linings, piping, steam plants, agitators, evaporators, and (b) accessory equipment, such as machine-hoods, conveyors, building structures, etc. The interest of the committee is in the metallic and non-metallic materials, the former as ferrous and non-ferrous alloys, and the latter as carbon and rubber applications, ceramics and protective coatings.

The various unit operations would start with wood handling, followed by chippers and chip-handling equipment, then the cooking liquor equipment, as well as recovery, bleach and by-product systems. Digester house equipment, pulp drainers, washers and screens will follow. The beater room might include liquid alum handling, piping and the beaters and jordans, while in the machine room, wires, hoods and calenders would be considered.

The questionnaires to be sent out would cover some part of the unit operation and recipients would be invited to submit points which they might desire to be included. Replies to the questionnaires would be compiled and classified by the committee for publication.

Mr. Miller considered that the Superintendents' Association would take an active interest in the work of his committee, but the plan proposed was a tentative one and the attitude of the association toward it would be awaited with interest.

Discussion Wanders Far Afield

The discussion which ensued was not confined to the question at issue—namely, the advisability of sending out a questionnaire to member mills. Several members discussed methods of preventing corrosion by means of wooden pipes and pipes coated on the interior with cement, while others recommended copper piping. The main question of answering the questionnaire through the chemists connected with mills acting under the advice and encouragement of the superintendent was lost sight of until Mr. Miller reminded them that the idea was to get the superintendents to agree to the chemists and others in the mill replying to the questionnaire, and after a motion by Mr. Ellis to this effect had prevailed, Mr. Miller said he had expected that the association would co-operate with his committee. In subsequent discussions led by Carl Magnus it was recommended to operate through the Mill Service Committee of the Superintendents' Association. Followed another discussion in which the question of sending a questionnaire through the T.A.P.P.I. Committee to superintendents was reopened and another excursion made into methods of overcoming specific forms of corrosion. Mr. Rooney asked for a remedy for the pitting of calender rolls, which appeared under peculiar conditions. The roll had worked satisfactorily for a period of five years when pitting started. The roll was reground and pitting started again two months afterwards.

Value of Chrome Plating Brought Out

George L. Bidwell told of a similar experience with the calender rolls. The trouble was overcome by chrome-plating them. They had now been running for four months and were as good as new. Others agreed with Mr. Bidwell on the value of chrome plating as a means of preserving the surface of calender rolls.

Checking Steam Waste in a Paper Mill

The next paper, by H. M. Wilson, of H. M. Wilson Company, Engineers, Philadelphia, was one of great interest and practical value to paper mill owners and plant engineers. It did not treat of power plants and their design so much as of economies that might be effected in the manufacturing processes through the elimination of waste. The title of Mr. Wilson's paper was "Steam and Power Accounting in a Paper Mill," the complete text of which appears on another page in this issue.

Queries and Answers at Round Table Discussion

In addition to President Magnus, two ex-presidents of the national association took part in the round table discussion which followed the reading of papers at the afternoon session which was prolonged until six o'clock. Ex-President James G. Ramsey took charge of the meeting, gave out the queries and invited members to answer them.

Green Slime in Pulp—One member submitted a specimen of a green curdled material which had collected on the fourdrinier at the Voith inlet. A well-known brand of Finnish unbleached sulphite pulp was said to be the origin of the growth and a lengthy discussion ensued as to its probable nature. Some members suggested that the growth had probably developed in stagnant water, but others were strongly of opinion that the growth was due to a fungus and it was suggested to submit the pulp to a bacteriologist and microscopist for a report on the nature of the slime. Insufficient cooking of the pulp was mentioned as a probable cause of the trouble and a preliminary washing of the pulp before bleaching was recommended as a remedy.

Other Queries—One of the queries had to do with the disposition of stock in a couch pit. What was done with it? The answer was to put it back in the stock chest. The proper speed of a jordan having a capacity of 1,000 lb. on rag paper was the subject of another paper and 450 r.p.m. was mentioned as being used, though on wood stock 375 r.p.m. was considered right.

Another question brought up was the amount of water required to take a ton of 60 lb. paper over the machine. Each machine tender had his own ideas, it was brought out, concerning the amount of water to use in diluting stock to get the right kind of a sheet and Ex-President Ramsey gave a most interesting little talk on this subject. He is a believer in using excess quantities of water and told a story of his experience with a mill superintendent who had charged him with using too much water in producing a certain grade of paper. He did use a far greater amount of water than the superintendent did, but as he told the latter "You run the paper on the floor; I run it on the reel."

Banquet in the Evening

The meeting closed with a banquet in the evening at which Ex-President Ramsey acted as toastmaster. There were speeches by Mr. Magnus, Mr. Rooney, Mr. Post and Charles L. Ellis, and Chairman Gildenzopf closed the proceedings by announcing the winners of the golf tournament, though Charley Ellis had the last word in urging as a final appeal to those present to "sell" the association to superintendents throughout the two States.

Mr. Magnus gave some particulars of the arrangements for the forthcoming annual convention of the national association at Dayton, Ohio, June 4, 5, and 6. The entire fourth floor of the Biltmore hotel, Dayton, is to be reserved for the association.

The Camerons in Papermaking

In the course of a lecture delivered by James Strachan before the Technical Section of the Paper Makers' Association of Great Britain and Ireland at Gravesend near London on February 28, the evolution of the fourdrinier paper machine was discussed. Mr. Strachan stated that near the end of the 18th century a means of handling hand-moulds mechanically was devised and operated by Robert Cameron at Springfield Mills near Edinburgh. This worked quite successfully, said the lecturer, and was referred to locally as "The Wooden Man." Here we have the germ of an idea developed later in the first papermaking machines.

James A. Cameron, of Brooklyn, N. Y., who has been active for many years in the development of roll winders for paper machines, and slitting and roll winding machines for various uses, bearing the name of Cameron, is inclined to claim the aforesaid Robert Cameron as one of the members of the Cameron clan, and regards him as an ancestor, which would mean that the Camerons in one way or another have been tied into the paper machinery line from the late 1700's down to 1931.

As to the development prior to 1700 in mechanical means for making and converting paper, that is not important, James A. says, but what has recently happened and may continue to happen in the development line from 1931 on is of thrilling interest and importance, and James A. says he hopes to go along with it.

Displays at New York Chemical Show

Many Exhibits of Interest to Pulp and Paper Plants and Chemical Laboratories

IN the comprehensive series of exhibits staged at the Thirteenth Exposition of Chemical Industries at the Grand Central Palace, New York, during the week of May 4-9, many new developments, some of spectacular interest, were revealed in industries having a chemical basis. Raw materials, equipment, machinery and finished products comprised the scenery of an enormous display, which occupied three floors, forming a show that was remarkable for its contrasts, ranging all the way from cellophane sheets called "Aquatone," and tiny instruments of precision, to huge machines towering to the mezzanine floor of the exhibit hall.

During the two years that have elapsed since the previous exposition many advancements have been made in processes and products, as well as in the machinery and apparatus of chemical engineering, and among the more than 450 exhibits, not a few represented new metal alloys designed to resist the attacks of corrosive liquids. Manufacturers of synthetic resins and of cellulose and casein plastics made exhibits of more than ordinary interest.

Many undergraduate students of universities were attracted to the exposition for attendance on a valuable course of lectures in chemical engineering under the direction of Dr. W. T. Read, dean of chemistry, Rutgers University. The exposition was apparently unaffected by the prevailing widespread trade depression and, in extent and variety of display, it compared favorably with that of 1929. The chemical industries expositions are held at two-year intervals.

A large number of the exhibits represented machinery and apparatus finding use either in the plant or laboratories of pulp and paper manufacturers and detailed notices of these exhibits are appended.

Abbé Engineering Company, New York—This firm exhibited pulverizing, grinding and sifting equipment, together with a line of rotary vacuum, pressure and liquid pumps of the Beach-Russ Company, an allied concern. A large pebble mill was shown in operation, equipped with a new type of valve, as used by the paint and lacquer manufacturers. Small jar mills, laboratory mills, rotary cutters, attrition mills and high speed beater mills were also exhibited.

Alberene Stone Company, New York—An Alberene stone center table with stone reagent shelves, sink and also gutter, all supported on cabinet work, was the central attraction at this booth. Adjacent to an Alberene stone wall, reagent rack, sink and pegboard was a new baffle type fume hood with vent opening at the top.

American Hard Rubber Company, New York, displayed a complete line of equipment for corrosive solution handling; interesting installation photographs were shown. The attention of paper manufacturers was called to ACE rubber lined pipe, fittings and gate valves, rubber lined centrifugal pumps and tanks as used in handling bleach and sulphite liquors and in pulp lines. Literature was distributed covering a line of hard rubber ductor blades and suction box covers used in the industry.

Anti-Hydro Waterproofing Company, Newark, N. J., displayed a number of concrete tanks made waterproof and resistant to the action of acids, alkalis and chemical solutions by having incorporated in the concrete a sufficient quantity of Anti-Hydro. These tanks bore labels to show that they are being used to store such acids and other chemical solutions as sulphuric acid, nitric acid, bleaching solutions, hypo, sugar solutions, fuel oil, acetic acid and salt brine. In addition, the company had on display various sections of cement floor as made hard and resistant to the same solutions, to show how such floors are treated for installation in packing houses, chemical plants, dairies, bakeries and wherever a cement floor finish is required to both withstand heavy traffic and chemical action.

Bailey Meter Company, Cleveland, Ohio—This exhibit consisted of metering, control and regulating equipment. Bailey boiler meters, fluid meters, multi-pointer gauges and Selsyn operated equipment were shown mounted on meter panels. A Bailey remote type liquid level recorder was seen in operation. An outstanding feature of this exhibit was a gravity recorder for making a continuous record of the gravity of a liquid as it flows through a pipe line or as it is sampled from a storage tank. A number of installation photographs, charts, curves and diagrammatic drawings on process control installations made a display of interest to chemical engineers.

Bakelite Corporation, New York—Bakelite Corporation's display consisted of new Bakelite resinoids adapted to the making of quick, durable, air dry finishes, the exhibit being developed around a central panel showing the initial resinoids. Adjoining panels revealed the application of the finished products in as many fields.

Baker Perkins Company, Inc., New York—The Werner & Pfleiderer division of this company exhibited a Werner & Pfleiderer "Universal" mixing and kneading machine of 50 gallons working capacity with jacketed trough constructed in the new corrosion-resisting metal, chrome-nickel-iron (18—8). A model was shown of a recent development in dissolving machines for making nitro-cellulose, cellulose acetate, and similar solutions. Of interest to rayon producers was a new type of high-speed pulping and shredding machine for alkali cellulose; and further refinements in the "Vissolver" for preparing viscose solutions.

Beach-Russ Company, New York, displayed a new type of pump used for pumping tomatoes, fruits and various pulps, and demonstrated a high vacuum pump exhausting on a mercury column and McLeod gauge, showing a vacuum of one micron, and an oil seal finishing pump capable of producing a vacuum of one-tenth of a micron.

Bethlehem Steel Company, Bethlehem, Pa., showed various sections of corrosion resisting steel and enlarged photographs of equipment manufactured for the chemical industry.

Blaw-Knox Company, Pittsburgh, exhibited a tank made of two-inch steel plate which was subjected to 10,000 lb. to the square inch hydrostatic pressure. The Blaw-Knox Ductilwelding process of electric welding was used in its construction. Also exhibited were small turbine mixers of unique design, Blaw-Knox steel grating, and examples of Blaw-Knox Ductilwelding, and Blaw-Knox weighing and volume batchers as used by the process industries.

The Bristol Company, Waterbury, Conn.—The Bristol Company's exhibit comprised indicating, recording and controlling instruments and accessory equipment particularly applicable to chemical industries and processes. The display included such instruments as recording and indicating pressure gauges, recording thermometers, recording and indicating pyrometers, recording and indicating tachometers, recording psychrometers, and recording voltmeters, as well as a line of automatic control equipment for temperature, pressure, liquid level, humidity, motion, etc. Much interest was taken in the latest development in predetermined time or cycle control which is now being introduced.

The Brown Instrument Company, Philadelphia, made an extensive exhibit of instruments for measuring and controlling temperatures, pressures, flows, liquid level, vacuum, speed,

and other important operating factors in the process industries. Among the instruments shown were Brown recording controlling pyrometer, multiple point recorder, trend analyzing controller, recording thermometer, recording integrating flow meter, recording controlling flow meter, recording pressure gauge, recording CO_2 meter and pyrometer, liquid level recorder, recording resistance thermometer, DeFlorez remote manual control and a high pressure manometer.

Buffalo Foundry and Machine Company, Buffalo, N. Y., exhibited a new type of evaporator with an outside steam-chest, which has been used successfully in the concentration of black liquor in the paper industry. An atmospheric double drum dryer, equipped with a new patented paste feed, was also shown. This type of dryer is said to bring the economy and advantages of atmospheric film drying to a large group of products of extreme low fluidity. It has also been employed for drying filter press cakes after the addition of water and the material has been repulped.

Fred S. Carver, 345 Hudson street, New York, had on display and demonstrated the workings of the Carver Laboratory Press, an apparatus of interest to pulp and paper engineers, which has been devised for pressing pulp, dewatering test sheets, pressing fiber board, laminations and plastics, either hot or cold. It is a laboratory instrument, which can be set up on a bench or table, equipped with a drain to carry off water, also electric or steam hot plates.

Continental Diamond Fibre Company, Newark, Del.—This firm exhibited a line of non-metallic materials in sheet, rod, and tube form, which included Dilecto, a laminated synthetic insulating material; Celoron, a molded canvas material made especially for silent gears and Diamond vulcanized fiber. An innovation in piping and fittings was featured, these being made from fabric base Celoron which is non-corrosive, and highly resistant to acids.

The Dorr Company, New York, had on exhibition models of Dorr equipment for the continuous mechanical treatment of mixtures of solids and liquids, including such machines as the Dorr thickener, classifier, agitator, clarifier and Dorrco filter and pump. By means of motion pictures various applications of the machines in chemical, industrial and sanitary engineering fields were shown. A new type of Dorr classifier was also exhibited.

The Duriron Company, Inc., Dayton, Ohio—At this booth castings were exhibited of Duriron and Durimet, corrosion-resisting alloy metals. A self-priming centrifugal pump was displayed in full operation, with glass piping and windows to show the functioning of the pump as it worked. A full size working model of a new duplex reciprocating pump with parts cut away to show the oiling system and nicety of machining was also on view. "Y" valves in both Duriron and alloy steels in sizes from ¾" up to 6" were exhibited, as well as an extensive display of other articles made from both alloy metals. Of special interest to pulp and paper men were the valves and fittings for sulphite digester work in Durimet, KA2, KA2S and KA4 (Durco Nirosta alloys).

Eastman Kodak Company, Rochester, N. Y., featured cellulose acetate and its products. On display were several types of cellulose acetate in the different forms which are available for fabrication, including sheets, rods, solutions, etc. Examples of finished products were shown, illustrating the special advantages of cellulose acetate in the electrical, aviation, and food packing industries. Photographic chemicals and the special organic chemicals prepared for research work were displayed, together with photographs showing their preparation.

Eimer & Amend, New York, made a comprehensive exhibit of chemical testing apparatus. Of special interest was a De Graaf apparatus for determining the fusing point of coal ashes and similar high temperature fusing points. There was also exhibited an A.P.C. photoelectric opacimeter for testing the opacity of paper and similar materials, in addition to a line of chemical glassware, including burettes, pipettes, flasks and cylinders with B. of S. certificate.

Electro Bleaching Gas Company, New York—This booth was shared by the Niagara Alkali Company. The materials exhibited of particular interest to the pulp and paper industry consisted of liquid chlorine, bleaching powder and caustic soda.

Charles Engelhard, Inc., Newark, N. J., displayed and demonstrated a complete line of temperature measuring and recording instruments, as well as switching apparatus used in connection with thermal electric circuits in order that temperatures may be determined from remote points. Gas analyzers for measurement of CO_2, oxygen, ammonia, SO_2, etc., were also shown. A new portable gas analyzer known as the Engelhard Gasalyser was exhibited for the first time. This apparatus enables the plant operator to measure all plant gases electrically. A special display demonstrating the performance of the analyzer showed the apparatus in operation, white mice being sealed into a large glass case and the amount of CO_2 exhaled by the mice measured on an electrical instrument. While this exhibit had no definite value to industry as a whole it was employed to demonstrate the sensitivity of the equipment.

J. L. Ferguson Company, Joliet, Ill.—This exhibit consisted chiefly of a multiposter advertising machine, showing 24 different views of installations of all kinds of Packomatic Packaging Machinery. A Packomatic "Scott" scale was displayed in operation.

Filtration Engineers Incorporated, Newark, N. J., showed in operation a small FEinc filter operating in conjunction with a pair of squeeze rolls, the two units comprising what is called a high consistency thickener. A FEinc vacuum continuous filter was also exhibited working in conjunction with a Proctor re-circulated air dryer. An attractive leaflet was distributed to visitors.

Fletcher Works, Philadelphia, had on display a 48-ft. direct motor driven suspended centrifugal with "Lewis" open-bottom basket type of construction, which is said to greatly increase production through reduced charging and discharging time.

Foxboro Company, Foxboro, Mass.—Featured at this booth was the Foxboro Stabilizer, an instrument that is said to solve complicated process control problems involving temperature, pressure or flow. In addition to the stabilizer, the Foxboro Company showed several additions and improvements to their standard line of indicating, recording and controlling instruments.

General Ceramics Company, New York, made an exhibit of new types of equipment and new ceramic products, including an armored stoneware centrifugal pump direct coupled to an electric motor suitable for handling acids and corrosive liquids. Also on exhibition was a model of the system adopted by acid plants, textile mills, etc., for the storage and distribution of corrosive liquids, specially muriatic acid, nitric acid, bleaching solutions and other chlorinated products. The actual capacity of the original installation is about 4,000 gallons. Of interest to paper mill chemists were grinding balls for pebble mills made of a hard dense ceramic material about 50 per cent heavier than ordinary stoneware. The exhibit included miscellaneous ware such as storage vessels, tanks, impellers for pumps and exhaust fans, flanged and bell and spigot pipe with fittings, gutters, condensing coils, miscellaneous types of plug cocks, ground and polished balls, tower packers, etc.

General Electric Vapor Lamp Company, Hoboken, N. J.—This company, which is the successor of Cooper Hewitt Electric Company, exhibited Uviarc equipment for industrial testing and manufacturing processes, as well as laboratory experimentation. The display included the Uviarc test cabinet, Uviarc laboratory outfit and the Uviarc Lab-Arc, besides a line of drugs, foods, and other materials which had been either tested or treated during their manufacturing processes under the Uviarc lamp.

The B. F. Goodrich Rubber Company, Akron, Ohio, had an exhibit of rubber lining for tanks, pipe, and other metal containers. A new construction known as "Triflex," a combination of hard and soft rubber in which expansion joints have been provided, and over which is placed a protective sheathing of brick for the purpose of heat insulation, is said to be well adapted for lining digesters. Rubber lined pipe, valves, fittings and a pressure storage tank designed for handling muriatic acid and dilute sulphuric acid in the paper industry

were also exhibited. A device for demonstrating the use of Vulcalock was a feature of the exhibit. The Vulcalock process permits of vulcanizing rubber directly to metal so as to obtain a bond stronger than the rubber covering itself.

Goslin-Birmingham Manufacturing Co., Inc., Harvey, Ill.—Among the apparatus of interest to paper manufacturers, on display at this booth, which adjoined that of the Swenson Evaporator Company, was a Vallez filter which is used in pulp mills for filtration of cooking liquors. A model Brackelsburg furnace as used for making high grade special gray iron and alloy cast iron castings was also shown.

Griscom-Russell Company, New York, exhibited the G-R Bentube Section, which is a scale-shedding atmospheric cooler or condenser. By its use scale deposited on the outside of the tubes by hard cooling water is continuously flaked off during normal operation through changes in tube curvature which accompany variations in temperature. Another piece of equipment called the G-R KC Tubeflow section consists essentially of four steel tubes surrounded by a series of steel fins set at right angles to the tube axis and securely fixed to the tube. Liquid to be cooled passes through two of the tubes and the cooling liquid passes through the other tubes in counter-current flow. The fins conduct the heat between the liquids. Also exhibited were the G-R G-Fin Cooler and the Reilly Oil Heater.

Gruendler Crusher and Pulverizer Co., St. Louis, Mo.—A display of great interest to pulp and paper mill men was made by this firm, among the apparatus shown being a HammerMill Shredder as used for the shredding of lap pulp, frozen pulp, kraft pulp, broke paper and similar material, including rags. In addition there were exhibited heavy duty HammerMill wood hogs.

Hardinge Company, York, Pa., exhibited a model of the Hardinge Conical Mill and Air Classifier, together with a full size Hardinge Constant Weight Feeder, and a Rotary Tubular Conveyor. The latter machine was shown for the first time. A scene-in-action picture illustrating the principle of operation of the Hardinge Mill and Air Classifier was shown, and drawings and photographs of the Ruggles-Coles dryer were displayed.

Hercules Powder Company, Wilmington, Del.—At this booth the Hercules' Naval Stores Department showed how wastewood from southern pine is utilized through steam-distillation in the production of high quality naval stores. Turpentine, rosin, and pine oil, together with a number of terpene products capable of wide organic synthesis, are produced by closely controlled processes. A flow sheet illustrating the derivation of the various finished products from the original pine stump and waste wood featured the exhibit. The Cellulose Products Department of the Hercules company exhibited a panel illustrating the derivation, manufacture, and use of nitrocellulose, the basis of modern lacquers, celluloid, artificial leather, and a number of pyroxylin products, while the Virginia Cellulose Department demonstrated how cotton base pulp, a by-product of the cotton industry, is washed, purified and used in industry.

Johns-Manville Corporation, New York, had an elaborate exhibit of filtering mediums, including Filter-Cel, Standard Super-Cel, and Hyflo Super-Cel, which are said to improve clarity and reduce filtration costs. Samples were shown of packings, refractory cements and industrial building materials, represented by Transite, Built-up Roofing, Industrial Floorings, etc.

Maurice A. Knight, Akron, Ohio, had on display a complete line of acid-proof chemical stoneware, Knight-Ware laboratory equipment, such as sinks, pipe and fittings for waste, drain and ventilating lines; sumps and ventilating flue caps were featured.

Laboratory Furniture Company, Inc., Long Island City, N. Y.—The display made by this company included a typical wall type laboratory table with a number of new features, and also a chemical fume hood capable, it was represented, of giving a positive exhaust under any conditions, constituting a great forward step in the fume hood design.

La Motte Chemical Products Company, Baltimore, Md., exhibited standard equipment for pH control within the paper mill and technical representatives were in attendance to explain the application of pH control to various processes, including pulp and paper.

Leeds & Northrup Company, Philadelphia—The exhibit of this firm included an operating demonstration of L & N Automatic pH Control, as well as an operating demonstration of the L & N Anticipatory Controller, a controller which maintains thermal balance and provides the kind of control possible from a skilled operator with his eyes on the ordinary temperature indicator or recorder and one hand on the valve. The exhibit also included a large variety of other control and recording devices.

Lewis-Shepard Company, Boston, Mass.—Lift trucks and stackers featured this display, which also included arc-welded racks for storing drums and barrels, jacklifts, footlifts and singlelift trucks for handling skidded loads of paper and similar material; arc-welded skid platforms for use with these lift trucks were also shown. Beside these there were stackers for piling or moving material vertically, and portable cranes for lifting material to various heights.

The Linde Air Products Company, New York—At this booth a display of Oxweld, Prest-O-Weld and Purox apparatus was featured, almost every type of oxy-acetylene welding and cutting equipment used in the chemical industries, being shown. The new Prest-O-Weld blowpipes have a detachable valve body which enables the operator to change instantly from a large welding blowpipe to a cutting blowpipe or to a smaller welding blowpipe without the use of a wrench and without disconnecting the hose.

Liquidometer Corporation, Long Island City, N. Y.—The display at this booth consisted of liquid level gauges, both remote reading and direct reading, and a line of indicating and recording remote reading thermometers. The Liquidometer remote reading liquid level gauges and thermometers embody a balanced non-pressure hydraulic system as a means of indicating at a distance. In the case of the thermometer, the use of this principle makes the operation of the gauge independent of the expansion of a gas in a tube; it is said to operate on the expansion of liquid with no pressure on any part of the instrument at any time.

Mixing Equipment Company, Inc., Rochester, N. Y.—An interested group of visitors was always to be found at the booth of this company in which were exhibited various models of "Lightnin" portable mixers, as well as side angular propeller type agitators. These machines are used quite extensively in the paper industry for the mixing of colors, clay solutions, sizings, pulp, etc.

Monarch Manufacturing Works, Inc., Philadelphia, made an interesting display of Monarch Perfection Spray Nozzles, and distributed Catalog 6-C containing illustrated descriptions of various spray nozzles and valves.

Nash Engineering Company, South Norwalk, Conn.—The customary attractive display of pumps was made by this firm in a booth, the construction and arrangement of which drew many interested visitors connected with the pulp and paper industry. The major items on display consisted of Nash Hytor vacuum pumps and air compressors, Jennings centrifugal pumps, and Jennings suction sewage pumps. The Nash air compressors and vacuum pumps were shown in regular and in acid-proof construction.

National Lead Company, New York—Pumps of lead fabrication featured this exhibit, a vertical and horizontal "United" hard lead acid pump being shown in operation. Various types of "United" lead lined and hard lead valves were also on display. Standard lead lined and hard lead flanged fittings were on display together with accessories such as tank connections, various types of valve disks, etc. An important feature of the exhibit comprised a homogeneously chemical lead lined steel tank, having the chemical lead lining so attached to the steel that the two metals are inseparable under vacuum, pressure and temperature change close up to the melting point of lead itself.

Newark Wire Cloth Company, Newark, N. J., had an interesting display of various kinds of wire cloth, including several grades of stainless steel, together with 400 x 400 mesh phosphor bronze wire cloth, laboratory testing sieves, and similar equipment.

New England Tank and Tower Company, Everett, Mass.—Agitator drives were featured at this booth, a new line of totally enclosed type "T" agitator driving units being shown in addition to a demonstration of the company's Nett-co turbine agitators. Standard units of these new drives are furnished in sizes varying from ¼ hp. to 60 hp., with a range of ratios up to 2,000 to 1. The drives are well adapted for work in paper mills, in color and size mixers, clay tanks and stuff chests.

Oliver United Filters Inc., New York—Included among small filter units of various types, some of which were actual working units of small size, were apparatus that had special interest for the paper industry, including an American pulp type continuous disk filter, an Oliver drum filter arranged for lead-roll discharge, and a standard type Oliver filter which might be considered as representing the Oliver lime mud filter. In addition, there were shown a Sweetland pressure filter, a small model of the Kelly pressure filter, and an Oliver top feed filter. Samples were exhibited showing feed to the filters and the products made by the operation of filters. Representatives provided with diagrams and photographs of apparatus were present in the booth to explain working operations.

Palo Company, New York, exhibited some interesting mill laboratory equipment. Among the apparatus shown were noted an Ives Tint Photometer, as well as balances, daylight lamps for color matching, Meker furnaces for high temperature, hydrogen ion apparatus, thermometers, microscopes, rheostats, and photomicrographic cameras.

Philadelphia Gear Works, Philadelphia—Among the speed reducing units exhibited by this well-known company was a spur gear unit direct connected to motor with flexible coupling, all mounted on baseplate, and a New Series Heavy Duty Small Worm Gear Speed Reducer, size 1 Type R.T., with all parts entering into its construction. A new Heavy Duty Worm Gear Speed Reducer, size 1061, was shown in a housing made of welded steel construction. It has been customary to furnish this equipment with cast iron housing. Also exhibited was size 1556 Type V.T. Vertical Heavy Duty Worm Gear Speed Reduction Unit with bronze propellor attached to vertical shaft, a type of unit frequently used for driving mixers and agitators, Sykes Herringbone Gears were shown mounted in stand, as well as Gleason type Spiral Bevel Gear.

Philadelphia Quartz Company, Philadelphia—This company is observing its 100th anniversary, and exhibited their numerous brands of silicates of soda, also their newest product Metso, sodium metasilicate, a loose, granular white product completely soluble in cold water. Doucil a base-exchanging gel for softening water was also displayed. In attractive exhibit bottles were displayed the most important of the 33 grades of soluble silicates. The feature was a display of sodium metasilicate (Metso), two vigorous angular figures, representing crystalline structure. Sodium metasilicate has valuable properties heretofore unknown which make it useful in many kinds of cleaning. The exhibit included various articles in industry cleaned by the new alkali.

Proctor & Schwartz, Inc., Philadelphia—The display made by this firm had features of particular interest to paper manufacturers, as it included a demonstration of the new Proctor Air Dryer for tub-sized bond and other writing papers, as well as for a variety of other processed papers and materials in continuous sheet form. With the new Proctor air-drying machine the continuous sheet is carried in festoons but it also moves continuously over the festoon supports, threading its way up and down toward the delivery end quite independently of the main movement of being carried. This is accomplished by having for the festoon supports a series of rotating rolls of small diameter. In addition to demonstrating this new Proctor Air Dryer for paper, engineers in attendance showed various types of Proctor Dryers for many other kinds of material.

Quigley Company, Inc., New York, exhibited three new products: Annite, Q-Seal, and Mono-Bond, as well as acid-proof cement, Mono-Line, Quigley Refractory Gun, Ganisland, Q-Chrome, and Triple-A protective coatings. Annite, is introduced as a cleansing compound adapted for both general and special purposes in all branches of industry. It is put up under various labels or brands: one for all general cleaning operations; another for use in dish, bottle, and can-washing machines; another for cleaning non-ferrous metals, such as aluminum, brass, etc., and their alloys; and still another for cleaning iron and steel and ferrous alloys, also copper. Of interest to paper mill men was Red Label Annite, which is used for washing felts. Colloidal in its action, Annite is said to break down glaze, size and other substances that lie in the nap of felts. Other Quigley products on display included Hytempite, a high temperature cement for bonding and repairing refractory structures and equipment, and Acid-proof Cement, ready mixed for bonding and repairing acid structures of masonry. These products were ingenuously and decoratively exhibited on a moving turn-table.

Richardson Scale Company, Clifton, N. J.—This exhibit attracted considerable attention, as a full size Convey-o-Weigh for weighing wood chips, coal, sulphur, clay, cut rags, was on display. The machine consists of two conveyors, one the feeder and the other the weigher. The weighing conveyor is suspended from scale levers and the feeder conveyor is started and stopped by means of switches controlled by the movement of the weighing conveyor. Thus, when the full load has been deposited upon the weighing conveyor, the feeder is stopped until all the material has passed off the weighing conveyor. Each weighing is separate and distinct and the accuracy of weighing can be tested at any time. Also exhibited were the Richardson Compound Bin, Chute and Gate which is used for handling such materials as pigments, zinc oxide, lithopone, whiting, etc.

John A. Roebling's Sons Company, Trenton, N. J., which has taken over the New Jersey Wire Cloth Company, exhibited wire cloth, wire screen, filter cloth, fine meshes in phosphor bronze, monel, nickel, nichrome, etc.

Sarco Company, Inc., New York—A complete line of Sarco thermostatic and float type steam traps was shown in the booth occupied by this company. In addition were several novelties like the Sarco No. 9-2 steam trap, which is equipped with extra long bellows protected by a shield against damage through the abrasive action of dirty steam. Stainless steel is now used for the valve head and seat in order to prevent wire drawing and erosion, and the valve head is mounted movably so as to be self-aligning. Self-operated temperature regulators of Sarco design were also exhibited.

Schutte & Koerting Company, Philadelphia, Pa.—This exhibit included numerous mechanical appliances for chemical process work. Among them were spray nozzles for water and other liquids, Everdur fittings for pipe lines carrying corrosive liquids and gases, barometric multi-jet condensers for evaporator work, two-stage steam jet vacuum pump, lead and lead lined valves for acid lines, Radiafin tubes and pipes for heating and cooling service, gear pumps for oil and other liquids, obnoxious vapor condenser and water jet agitator for mixing liquids.

The Sharples Specialty Company, Philadelphia—In addition to a totally-enclosed Sharples Super Centrifuge of the firm's Presurtite design, a cross-sectional view of the machine, illustrating all the principal working parts, was shown. An interesting display was made of a 20-inch Horizontal Bulk Centrifugal. The type shown was of the smallest size manufactured since these machines were introduced, not only in the 20-inch size, but also the 48-inch and the 63-inch. These dimensions refer to the diameter of the basket. In the larger sizes, the machine can be furnished for full automatic operation, completely equipped for automatic loading and unloading. The machines are furnished with either solid baskets or with perforated baskets. They are rather a new development, but many applications have already been found for the equipment.

T. Shriver & Company, Harrison, N. J., exhibited filter presses of different types and a special design of diaphragm pump. There was also exhibited a special type of cartridge filter.

Swenson Evaporator Company, Harvey, Ill., made a display of considerable interest to pulp and paper mill engineers. The main feature was a scene-in-action drawing of the Swenson forced circulation evaporator, showing the internal working, flow of steam, liquor, salts, etc.; types of evapora-

tors were shown in large closed sectional drawings. Displayed on the walls of the booth were views of installations, one being of forced circulation evaporators applied to pulp mill black liquor work. Pulp washers were also pictured. Descriptive literature was available to those interested.

Tolhurst Machine Works, Inc., Troy, N. Y.—The exhibit of this company recorded a number of significant new developments in centrifugal design. The machines displayed included the recently developed Tolhurst Paper Stock Centrifugal, used for removing impurities from paper stock, as well as a Tolhurst. Suspended Centrifugal equipped with two-torque drive and with mechanical unloader for the separation of filterable solids from suspension. Also shown were the Tolhurst Solid Curb Centrifugals for small batch operation, and the Tolhurst Laboratory Centrifugal for research and process control.

The W. S. Tyler Company, Cleveland, Ohio—The Hum-mer electric screen was featured at this exhibit, a Type 38 being shown, as well as a model Hum-mer, a Ro-Tap Testing Sieve Shaker, testing sieves and wire cloth samples. The model size Hum-mer was seen in actual operation, two sizes of sand, each in a different color being used to make the separation visual as well as actual, since the sides and top of the Hum-mer model were of glass.

Turbo-Mixer Corporation, New York, staged a demonstration of a Turbo-Equipment in operation on actual work for various process industries. The mixing of liquids with other liquids, solids and gases was shown as applied in such fields as oil refining, paint, varnish, lacquers, cellulose, paper and pulp, etc., forming a most attractive display.

United States Rubber Company, Passaic, N. J.—This company had two booths for the exhibition of protective rubber linings and coverings of which a complete line was shown, including the latest developments in hard and soft rubber.

The U. S. Stoneware Company, New York—Several novelties of the firm's manufacture were exhibited, among others a sanitary tumbler mixer known as Electric "Tumbel-mixer," made in sizes up to 25-gallon capacity, operating on the revolving barrel principle. Of special interest to paper mill laboratories were ball mills with chemical stoneware barrels offered in relatively large sizes, for the grinding of powders, and laboratory jar mills for grinding and pulverizing, fitted with chemical stoneware jars. "Vitric" and "Vitrite" quick setting acid-proof cements were also exhibited.

Vanadium Corporation of America, Bridgeville, Pa.—The new opacity mineral, titanium dioxide, employed in the manufacture of special papers, was on display at this booth. The main display was of compounds of vanadium, principal among which are ferro-vanadium, for the preparation of special steels, and ammonium meta vanadate and vanadium pentoxide, for the preparation of catalysts used largely in oxidation reactions. The titanium compounds were exhibited by the Southern Mineral Products Corporation, a subsidiary of the Vanadium Corporation of America.

Westvaco Chlorine Products, Inc., South Charleston, W. Va.—The display made by this corporation was confined to the Vorce Electrolytic Caustic Chlorine cell, which was shown in part section to indicate the essential features of the cell.

Gilmer Buys Panama Rubber Co.

The L. H. Gilmer Co., Philadelphia, Pa., recently completed the purchase of the entire capital stock together with all assets of the Panama Rubber Co. of Chicago, Illinois. All fixtures and machinery of the Panama Rubber Co. have been shipped from Chicago to Philadelphia where all the large Gilmer activities are concentrated. Hereafter all Panama Rubber Belts which have been known by their Trade Mark of "Kable-Kord" will be manufactured by the Gilmer Organization as "Gilmer-Kable-Kord" Belts.

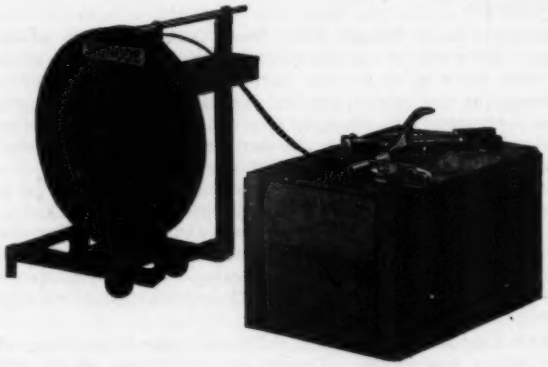
Former customers of the Panama Rubber Co. are invited to send orders or inquiries direct to the Gilmer Co. at Philadelphia for any Panama Belts for which they may have need.

The general offices of Foote Bros. Gear and Machine Co., Chicago, have been moved from 111 N. Canal St. to 215 N. Curtis St. The new telephone number is Haymarket 7321.

New Portable Reel for Steel Strapping

A strong dependable easy acting reel plays an important part in every shipping department. This is especially true in connection with the use of tensional nailless steel strapping.

To improve and speed up this feature of shipping department work, the Signode Steel Strapping Company of Chicago and New York have designed and built a new reel that is definitely better.

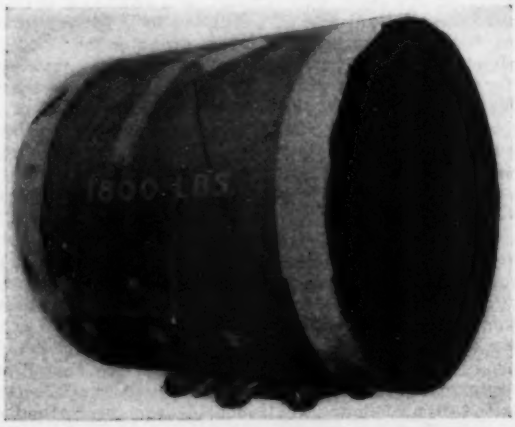


In the first place, unlike former equipment, it is of strong, sturdy steel construction that will stand all kinds of use and abuse without damage. It has light fast rolling casters for easy movement from place to place.

The new reel is quickly reloaded with strapping by simply loosening one bolt. The cylinder then opens to receive the new coil. The box is strong and large for a good supply of seals and tools too, if desired. A positive clip holds the strapping when not in use and avoids loosening or tangling. The hub is used for efficient braking service.

A Heavy Duty Dolly Truck

A new dolly truck of special interest to the paper industry has been introduced by the Marion Malleable Iron Works, Marion, Ind. This new model, No. 7, is designed for especially heavy service. Its overall length is 30 in., width 17½ in. and height 6½ in. and weighs 110 lbs. as compared with a height of 3 in. and a weight of 46 lbs. in the case of the lowest model in the Marion Line.



The curved frame, of certified malleable iron, cradles the load, balancing the heaviest roll perfectly. The dolly with its load pivots easily on the middle pair of wheels, negotiates narrow aisles. The shape of the frame ends makes loading from either end easy and strong malleable side skids permit loading from either side. This model is particularly fitted for handling heavy loads of roughly cylindrical shape. Another model has a flat top, useful for handling cases, cartons, crates, boxes.

Steam and Power Accounting in a Paper Mill[1]

By H. M. WILSON

INCREASE in costs for both raw material and labor, and the lowering of prices for finished paper, due to severe competition, have made it imperative that all manufacturers endeavor, as far as possible, to eliminate waste, and to make an accounting to themselves for the amount of steam utilized in and about the plant. Numerous papers have been written showing the annual savings in paper mill costs, by the installation of new power plants, boilers, stokers, turbines, etc. That these savings can be made, anyone will appreciate, if consideration is given to the fact that saving of this sort should be expected when an old plant, which may have been a model in its day, is being replaced by up to the minute equipment. This should be especially true, inasmuch as the modern equipment has the benefit of all advances in efficiencies that the engineering world has perfected in the last decade.

The great drawback to the advance of the industrial power plant, when comparing it with the modern public station, is the lack of knowledge, or the lack of facilities for keeping a complete check on the steam output, and balancing of this expense against the production of the mill.

The most efficient boiler plant which can be built, only means a saving in the coal pile, and if the product produced by the boilers is dissipated in its use throughout the mill, the efficiency can be very readily lost.

The question of purchased power, as against power produced by the owners generating equipment, is a problem that is being continually brought to the fore, and which carries with it the use of higher pressures, greater degree of superheat, and the utilization of by-product steam as a means of perfecting so-called heat balance.

The public service companies are offering current, especially to large users of power, at cost figures, which means that an operating engineer has to be in a position to make the most of its opportunities if the owner is to be shown a substantial saving on the investment charges necessary for the installation of generating equipment. In making any comparison of this sort, the operating engineer of a power plant, should have available concise and accurate data, which will fairly determine the advisability of making or purchasing his power.

No industry in the last ten years has shown greater strides, or has opened up a greater field for efficient use of steam and power, than the paper industry. For so large a user of both steam and power, the ideal combination of course is to balance out the electric load with the amount of steam required for drying, heating, cooking, etc.

The small mill presents its problem in the same proportion as the larger one, and each mill has its own individual problems to work out. When changes or additions are in order, new equipment has to be installed, and additions made to the plant, or perhaps new unit built. It is at a time like this that the owner should feel that the men in his employ have the intimate knowledge of his particular needs so well in hand, that he can proceed accordingly.

The small diagram (Fig. 1) represents steam balances in an imagined mill, and shows conveniently located thereon, small log sheet which the various members may glance over. It is a practical little log sheet; it tells with some degree of accuracy what is being accomplished, and what is being done in a plant, and those interested for their own satisfaction, might try filling a little diagram in, with a view of getting knowledge of just what they know about their own operation.

Most owners' operating plants of any size, have long since installed accounting systems, have a fairly concise and accurate bookkeeping department, and feel that at the end of each month, and certainly the end of each fiscal year, that their books should balance, and that the credits and debits should be accurately shown. The loss attributable to any department through neglect, mismanagement or waste, is in this manner brought forcibly to the owner's attention, with the subsequent result that steps are taken to remedy or change this condition.

Boiler plants, up to a few years ago, were considered necessary evils. Competition was not nearly so keen, coal prices were lower, and the habit was formed which resulted in the boiler plant of a mill being far from efficient, and being that part of the mill which could be blamed for all the shortcomings and failures of the rest of the mill.

With this background, it has been especially hard to bring to the owner's attention, and make them realize that the boiler plant and generating units can be an asset and not a liability; that it is just as essential to keep some sort of

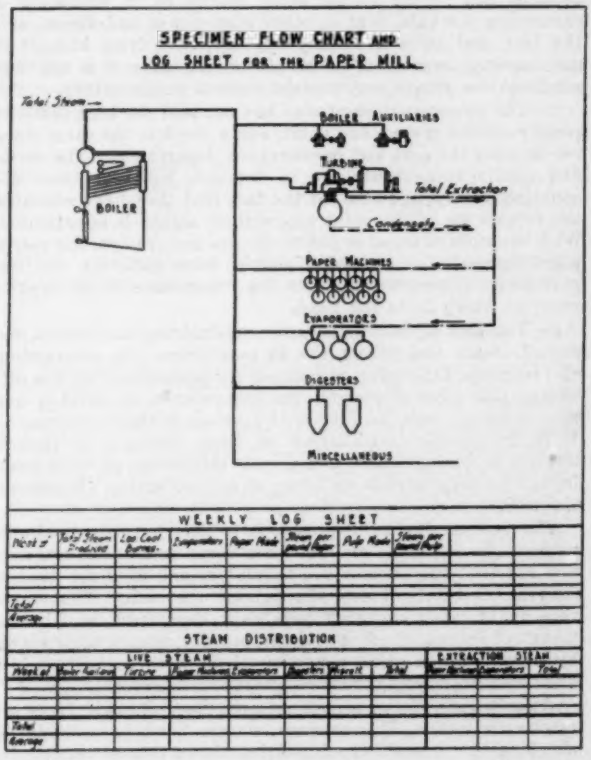


Figure 1

record and check not only in the boiler plant, but a check of what is going on in the rest of the mill.

We have in numerous cases, witnessed an owner arguing over 78 per cent or 80 per cent efficiency of the boiler and firing equipment, with no thought of testing the coal, except haphazardly, to see if the B.t.u. value was what they were paying for. A boiler plant can very readily operate at 80 per cent efficiency, but its successful operation means nothing if there are losses throughout the mill, which will more than offset any advantages gained in the fuel burning rate. A faulty dryer, a heating coil without a trap, a dirty evaporator, the use of live steam when exhaust steam is available, are all points which need the same checking as does the price paid for soda, chlorine or soda pulp.

In eliminating wastes throughout a paper mill, the start of course will, from a power standpoint, be in the boiler house. A certain quantity of raw material enter this particular department, and given quantities of steam and power, which are the product of this department, should be produced. This steam and power is distributed around the rest of the mill, and should be accounted for.

All engineers and no doubt every worthwhile operator and papermaker, always has in mind, that ideal mill where the most modern equipment, and papermaking machinery, beaters, jordans, etc., will be provided. Unfortunately a number

[1]Read before the Penna.-New Jersey Division of the American Pulp and Paper Mill Superintendents' Association, at a meeting in York, Pa., April 25, 1931.

of us have to live with other than ideal conditions, and some method whereby every day operating conditions may be checked, and points where waste takes place, corrected, we believe would be of interest at this time.

Power Records

When visiting or checking over industrial plants, it is the exception rather than the rule, to find steam and power records available, which are analyzed and studied, with a view of either increasing or maintaining efficiency of the mill.

There are perhaps three main reasons for this lagging behind the general accepted practice of the central station. The central stations are at all times insistent on heat balances, and overall efficiencies being maintained.

1—The first and main reason for this lagging behind, is perhaps due to the owner being interested in producing a commodity for sale, that is, other than power and steam, and the fact that he is in reality buying power from himself is not forcibly impressed, as would be the case if a bill was rendered for steam and current from a public utility.

2—The power engineer today has not sold the idea that the plant requires system and audit, and a check in the same manner as does the cost and bookkeeping department. The certified public accountants are in demand, both for their accounting ability, and also for the fact that they have educated the owners up to the point where their ability is appreciated. With the modern trend in power use and generation, the power plant operator or engineer, should have facilities and opportunities commensurate with the importance of the department of which he is the head.

3—The lack of instruments for determining the output and use of steam and power, are in most cases the outstanding shortcoming, this being accounted for sometimes by the difficulty and cost of placing the instruments in service, and also in many cases the failure to appreciate their importance. With the proper installation of these steam and electric meters, and a log which will permit tabulation of their readings, it is easy to pick up losses at a fixed saving throughout the mill.

The best method of approach is to keep records as simple as possible, but complete. Prepare some small flow diagram, and see that the records are tabulated, and used for analyzing the daily conditions throughout the mill. That these records, if conscientiously kept, will bear fruit, and be the means of increased efficiency, can be very readily appreciated by a comparison of figures derived from three mills, which are herewith briefly tabulated for ready reference.

As a means of comparing records, the following facts are made available. The savings shown have been made by checking the losses and eliminating them, this increasing the general mill efficiency.

(A)	Average Week 1929	Average Week 1931
Steam	15,800,000	17,300,000
Paper	810,000	1,100,000
Coal	835 Tons	890 Tons
Evaporation	9.3	8.9
Steam per lb. Paper	19.5	15.6
(B)	**Average Week 1929**	**Average Week 1931**
Steam	11,625,000	10,065,000
Paper	336,000	338,000
Coal	625 Tons	512 Tons
Evaporation	9.25	9.8
Steam per lb. Paper	34.5	29.8
(C)	**Average Week 1929**	**Average Week 1931**
Steam	25,100,000	21,400,000
Paper Board	5,120,000	4,054,000
Coal	1360 Tons	1200 Tons
Evaporation	9.3	8.9
Steam per lb. Board	5.	4.68

The foregoing records bear no relation to each other, when comparing one plant with the other, and the lb. of steam per lb. paper are relative only when compared with the plant in question, and the quality of the product.

One mill, as would be the case of the B Company, make all of their electric power, while the other two plants purchase, as well as manufacture some of this power. The records however, clearly set forth the fact that with instruments to give a check of conditions, it is possible to make improvements, and effect savings in the mill itself that will show substantial returns for the time, effort and money so spent.

With a lb. of paper produced at a reduction of only 2 lb. of steam per lb. of paper, in a mill producing, we would say, 30 tons of paper per day, 250 days in the year, and the steam considered at only 20c per thousand, this would mean a saving of at least $10,000 per year, besides reducing the load on the plant itself.

Losses in the Boiler House

It is only a question of time when a hand-fired plant and mill of any size, will be as rare as that of the public utilities. The trend toward modern method of fuel burning is such that what was a new development a few years back, is now common practice. If an owner of any fair size mill is operating a hand-fired boiler the summary of the coal consumed by the utility power plants in 1929, grouped by the type of combustion equipment will be enlightening.

	Tons	Per cent
Burned as pulverized coal	7,112,739	17
Burned on underfeed stoker	20,567,496	49
Burned on overfeed stoker	1,242,000	3
Burned on chain grate stokers	12,057,883	28.7
Burned on hand-fired boilers	973,068	2.3

When a new plant is considered, it is practically an assured fact that the boiler, combustion equipment and heat recovery systems, will be such that an efficient result can be obtained. After the plant is in operation, the operator who takes charge is at once confronted with the problem of keeping the plant at this top efficiency. The modern plant means more careful operation, a better knowledge of steam economics, and much greater upkeep cost, if the plant is not efficiently managed.

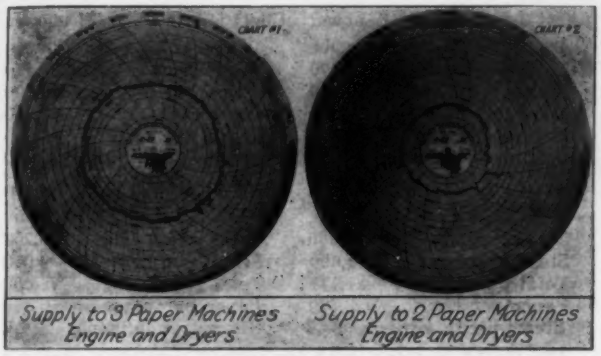
Flow meters on the boilers, draft gauges, feed water and temperature regulators, temperature recorders on the exit gases of the boilers, are the least that should be available. These instruments, together with the method of weighing the coal, and means of checking or metering the make-up water, will give a complete set of records. The reading of the instruments should be made at stated intervals, and the record logged in concise form for the owners', or superintendents', files and accounts.

A boiler plant designed for 75 to 80 per cent efficiency should show these results, and a turbine, engine, etc., placed in service, should show certain steam rates per kw. or hp. It is the engineer's job to see that these rates are maintained, and in the near future it will be part of the superintendent's position to see that he is accurately informed as to the place of the mills operation.

The returns in a paper mill are the means of effecting either a great saving or considerable loss to the boiler house. If they are cleaned and free from oil, their qualities for boiler feed are superior to the make-up water usually available, and every degree of temperature rise means that much less load on the boiler. Loss of returns are often occasioned by the men operating the paper machines, blowing dryers, coils, etc., to clear the machine. To do this, they open up perhaps bypass to the sewer, and forget to see that it is again closed.

The flue gas temperature on any boiler should be carefully checked and recorded. If this shows a tendency to mount above the ordinary figures, it is an indication of either dirty tubes or some trouble with the baffling. The carrying of the CO_2 must in a great number of cases, be determined by the character of the coal and fusing temperature of its ash. Clinker trouble, besides trying on the patient, also gives poor combustion. If trouble of this sort is affecting the efficiency, the operator should at once have the fuel analyzed, as high sulphur content and low fusing ash are the usual causes for excessive clinker trouble.

It is essential that the returns in a paper mill be brought back as much and as hot as possible; that a check be kept



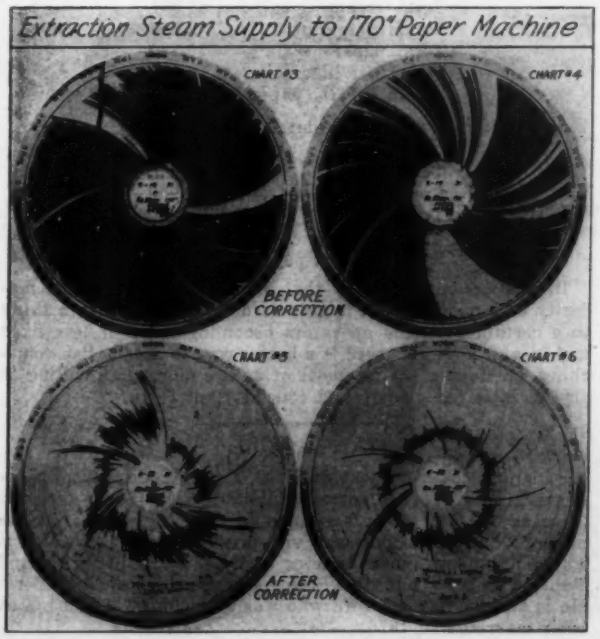
for loss in efficiency caused by unburned carbon or high gas temperatures; that walls be inspected for leaks, poor baffling, etc. The boilers should also be kept clean, both inside and out; the inside perhaps being of greater importance, because a check on the feed water characteristics has to be kept to determine the best method of approach.

With the boiler plant efficiently fired, we can now visit the paper mill, and check a few of the points which may show up on our steam distribution diagram.

Assume that the boiler plant is providing steam for the various processes, together with varying quantity supplied to the paper machine engines and turbine, from which extraction steam is used for process purposes. The heat balance in the mill has been effected by utilizing a bleeder extraction turbine, and there is estimated for the various processes, a certain amount of extraction steam. This steam would be provided at perhaps 20 to 30 lb. pressure for use in dryers, evaporators, heaters, etc.

Paper Machine

It is a question and a wonder just what the amount of steam used in the majority of mills actually amounts to when based on the amount necessary to dry one lb. of paper. As to the efficiency of the blow-through type of dryer, or some trap system, this is a matter of opinion. There are old mills operating with as good efficiency as some of the new modern installations. Of course I do not say that this is the fault of any system, but I would emphasize the fact that the importance of paper drying is in a system that is efficient, and gets the most drying effect out of one lb. of steam. So long as it was the practice to operate a paper machine engine, and send this exhaust into the dryers, the losses in this respect were of course kept to a minimum.



Charts 1 and 2 show steam supplied to a paper machine operated by means of steam engine drive where exhaust from engines is utilized in it.

Chart 1 shows steam provided and meter on line supplying three paper machines. The uniformity of the steam demand can be noted, showing that the horsepower required by the engines themselves practically determine the steam requirements. This chart secured shows operation on day of 4/23/31, operating log as follows:

Total steam	304,980
Steam per hour	12,800
Total paper	87,530
Paper per hour	3,700
Steam per lb. paper	3.5

Chart 2 shows the plant operating with one machine shut down. This chart secured shows operation on day of 4/22/31, operating log as follows:

Total steam	188,370
Steam per hour	7,800
Total paper	54,689
Paper per hour	2,250
Steam per lb. paper	3.5

With the installation of the larger, more complicated and electric driven units, the drying of paper has presented a problem that not only affects the steam demand, but with the installation of bleeder turbines, etc., has a direct bearing on the electrical generation itself.

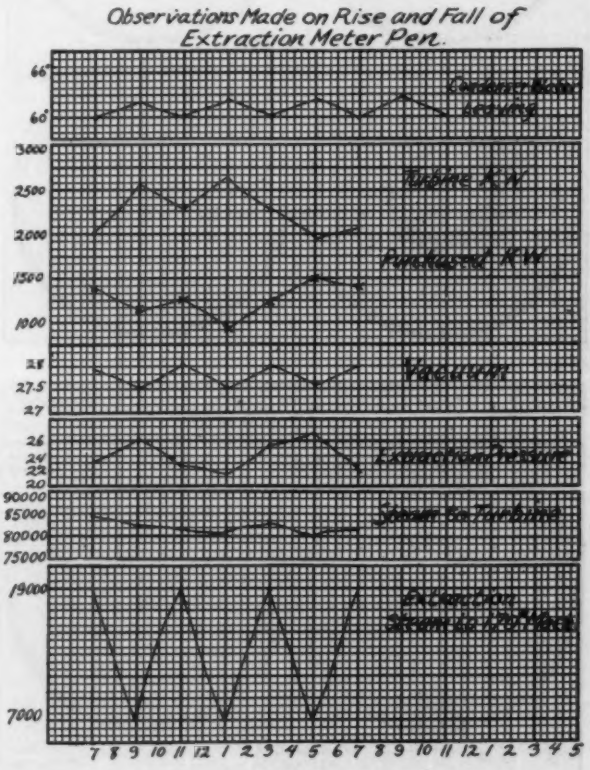


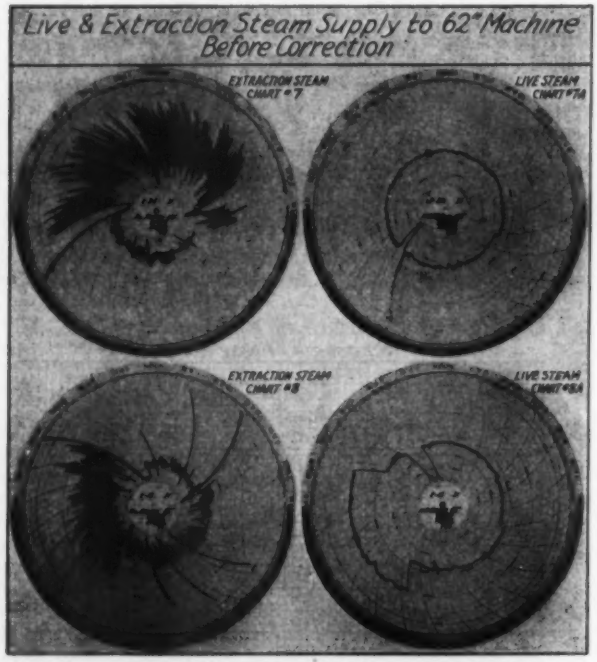
Figure 2

The steam flow charts and short interval curves plotted before and after a change was made in the paper machine regulation (Fig. 2) show the effect of erratic machine regulation on the action of the turbine. Until we had placed meters in service, this operating condition was not appreciated, and it meant poor control at the turbine, with a fluctuating generating condition, in consequence of the constant

change in the extraction demand, all of which can be clearly seen by the curve. With the erratic steam extraction the turbine, as can be noted, dropped its load, and this was transferred to the outside source of power, as the machine in this particular instance was operating in parallel with the Metropolitan Power Company's service.

That the amount of steam used for drying per lb. of paper will be reduced by well designed equipment is true, but with the modern installation, an efficient control system is necessary if the steam supply is to be kept uniform on the extraction end of the turbine.

The charts shown herewith give a very true picture of steam flow and demand of electric driven paper machine, utilizing extraction steam for drying derived from 3,750 kv. a. turbine.


Live & Extraction Steam Supply to 62" Machine
Before Correction
EXTRACTION STEAM CHART #7
LIVE STEAM CHART #7A
EXTRACTION STEAM CHART #8
LIVE STEAM CHART #8A

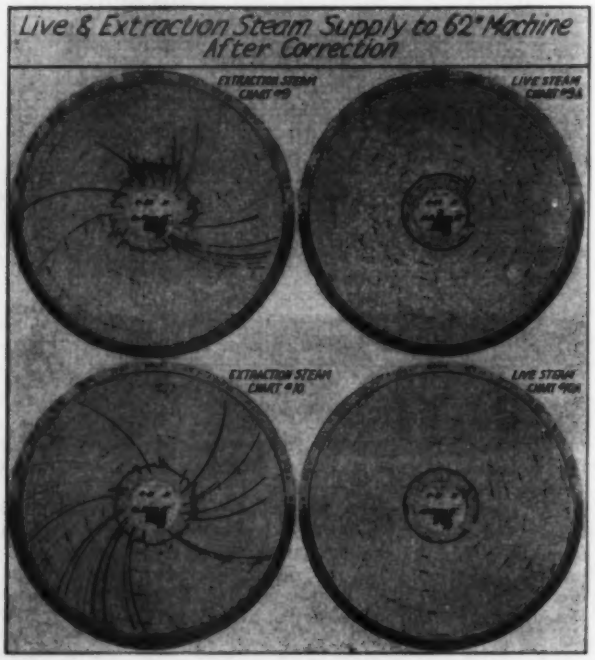

Live & Extraction Steam Supply to 62" Machine
After Correction
EXTRACTION STEAM CHART #9
LIVE STEAM CHART #9A
EXTRACTION STEAM CHART #10
LIVE STEAM CHART #10A

Chart 3 dated 2/18/31 shows:

	Pounds
Total steam	278,070
Steam per hour	11,500
Total paper	79,990
Paper per hour	3,300
Steam per lb. paper	3.45

Chart 4 dated 2/19/31 shows:

	Pounds
Total steam	281,060
Steam per hour	11,600
Total paper	81,131
Paper per hour	3,370
Steam per lb. paper	3.47

Chart 5 dated 4/22/31 shows:

	Pounds
Total steam	236,210
Steam per hour	9,800
Total paper	80,910
Paper per hour	3,360
Steam per lb. paper	2.9

Chart 6 dated 4/23/31 shows:

	Pounds
Total steam	218,207
Steam per hour	9,000
Total paper	78,000
Paper per hour	3,230
Steam per lb. paper	2.8

The saving in steam with the correct regulation, shows a decided improvement, beside eliminating the uneven demand on the turbine.

The next chart shows what can be accomplished when the engineer in charge is certain that a machine is using more than its share of steam. These charts indicate both the live and exhaust steam to a 62-inch paper machine, producing 700 lb. of paper per hour. The average saving effected in this respect represents easily 100,000 lb. of steam, or roughly five tons of coal saved per week.

Charts 7 and 7A, 8 and 8A show the steam requirements of a 62-inch paper machine before check.

Charts 7 and 7A dated 2/24/31 show:

	Pounds
Total steam	111,944
Steam per hour	4,600
Total paper	22,229
Paper per hour	920
Steam per lb. paper	5.

Charts 8 and 8A dated 2/18/31 show machine operating on both live and extraction steam:

	Pounds
Total steam	99,545
Steam per hour	4,120
Total paper	15,879
Paper per hour	660
Steam per lb. paper	7.56

The next charts show steam requirements after improvement in traps, dryers, leaks, etc., had been taken care of:

Charts 9 and 9A dated 4/20/31 show:

	Pounds
Total steam	67,031
Steam per hour	2,800
Total paper	16,330
Paper per hour	680
Steam per lb. paper	4.1

Charts 10 and 10A dated 4/21/31 show:

	Pounds
Total steam	70,458
Steam per hour	2,900
Total paper	17,490
Paper per hour	720
Steam per lb. paper	4.

In closing we might say that a paper mill is like the majority of human beings, it gets used to doing a certain thing in a certain way, the operators becoming more or less fixed and in a groove. If there is a better way to accomplish something, or make a saving, most of us are more than willing to try, if facts are clearly and concisely set forth.

Alvah Miller

Alvah Miller, president of H. G. Craig & Co., paper merchants, New York Central Building, New York, died on Thursday, April 16, at his home in Ossining, N. Y., at the age of 76. Mr. Miller was vice-president of the St. Regis Paper Company and a director of the Fort Miller Pulp and Paper Company and the Power Corporation of New York. He is survived by his wife who was Miss Phebe A. Sutton at their marriage in 1876.

Pacific Section of T.A.P.P.I.

Adoption of Articles of Incorporation and Announcement of Committees at Two-Day Meeting Complete Organization

A FORMAL organization of the Pacific Section of the Technical Association of the Pulp and Paper Industry was the outstanding phase of the business meeting held at Everett, Wash., April 18 and 19. With this definite foundation upon which to build, the western group will now enjoy a feeling of stability and will aim at sound, constructive effort for the progress and prosperity of the pulp and paper industry in this territory.

The fall meeting of the association which will be held this year at Powell River, B. C., is to be the annual meeting and at this time election of officers will occur. C. W. Morden of Portland is at present chairman of the section and has been working overtime in the interest of the organization. Nine articles of incorporation were adopted as follows:

Articles of Incorporation

Article 1 (Name)—The section shall be known as the Pacific Section of the Technical Association of the Pulp & Paper Industry, hereinafter referred to as the section.

Article 2 (Membership)—Membership in the section shall consist of members and affiliated members. (1) A member of the section shall be an active, associate or junior member of Tappi. (2) An affiliated member shall be any person interested in pulp and paper manufacture or in industries or institutions related thereto, but who is not a member of tappi. (3) Application for membership in the section shall be passed upon by the executive committees of the section. (4) Members and affiliated members shall be entitled to vote but only members may hold office. Otherwise the privileges shall be the same for both classes of members.

Article 3 (Dues)—The annual dues for this section shall be $3.00 per year for each affiliated member, payable in advance. There shall be no section dues for members. **Payment of Dues:** Annual dues shall be payable in advance and shall become due on the first of January of each year at which time a bill therefor shall be mailed to each member, except that members elected after the thirtieth of June shall be liable for one-half of the annual dues for the year.

Article 4 (Officers)—There shall be a chairman, vice-chairman, and secretary-treasurer of the section whose duties shall be the customary ones for each office.

Article 5 (Executive Committee)—The Executive committee shall consist of the officers of the section.

Article 6 (Election)—The election of officers shall take place yearly at the annual meeting of the section. Vacancies occurring during the year shall be filled by the executive committee until the next annual election.

Article 7 (Meetings)—The executive committee shall designate a date for the annual meeting for the election of officers and the transaction of other business.

Article 8 (Committees)—The executive committee shall appoint special committees as they see the need. These shall not become permanent committees unless voted on by the section as a whole.

Article 9—The articles of organization of the section shall be approved by the Executive Committee of the Technical Association of the Pulp and Paper Industry.

The convention program was handled in two sections both for convenience and conservation of time, although the afternoon program on which Dr. C. A. Curran of the United States Forest Laboratories at Madison, Wis., appeared was a combined session. Mr. Morden was assisted in arranging the program by C. E. Ridgeway, assistant secretary of the Puget Sound Pulp & Timber company and Carl Braun. Harry Andrews of the Powell River Co. is vice-chairman of the section and Myron W. Black of the Inland Empire Paper Co. at Millwood, Wash., is secretary-treasurer.

Paper Section

C. W. Morden presided over the paper section of the program which convened in the banquet hall of the Monte Cristo hotel where the convention was held. Among the papers presented were the following: White Water Utilization, by R. J. Schadt of the Hawley Pulp and Paper Company; Controlling Mill Wastes with Chlorine and Ammonia, by Brian I. Shera of the Wallace & Tiernan Co.; Western Cellulose, by D. E. Richter; Proper Care of Rubber Covered Press Rolls, by G. Elmer Emigh of the St. Helens Pulp & Paper Co.; Wood Waste As a Fuel in Pulp and Paper Plants, by H. W. Beecher of C. C. Moore & Co., Seattle.

Pulp Section

J. P. V. Fagan presided at the pulp section meeting which included the following papers: Proper Speed of Chippers, by S. Norman of the Sumner Iron Works; Some Remarks on the Counter Current Washing of Pulp, by C. R. P. Cash of St. Regis Kraft Co.; Bleachability Determinations of Sulphite Pulp, by N. W. Coster of the Puget Sound Pulp & Timber company; Lime Recovery, by Ralph Reid of the St. Helens Pulp & Paper Co.; Hot Acid Recovery in Sulphite Manufacture, by H. Lundberg of the G. D. Jenssen Co., Seattle; Three Phase Bleaching as Applied to Western Wood, by R. B. Wolf of the Weyerhauser Timber Co., Longview, Wash.

Dr. Curran Reviews Research

After an informal luncheon the delegates all assembled to listen to Dr. C. E. Curran's address on A Review of Current Research at the U. S. Forest Products Laboratory, Madison. Dr. Curran told of the infant paper mill of 50-pounds capacity which is used in the laboratory for experiments. He explained some of fields of effort maintained in the laboratory for the study of western woods and said that although Douglas fir had been one of the main phases of study he was inclined to think since visiting in this section that it would perhaps be more pertinent to give attention to hemlock. Since the object of Dr. Curran's trip to the western section was to determine just what special study would be most helpful it is expected that more stress will be given the western hemlock situation in the laboratory hereafter.

Further functions of the laboratory, Dr. Curran explained, was in classification of trees for their pulp producing qualities, and the processing and handling of materials in the mills.

Ray Smythe, manager of the Willamette Iron & Steel Works, Portland, followed Dr. Curran with a talk on equipment illustrated with slides.

Personnel of Committees

A letter from R. G. MacDonald, national secretary of Tappi was read announcing the section committees as follows:

Educational Committee—Myron W. Black, Inland Empire Paper Co., Millwood, Wash.

Management Methods Committee—R. B. Wolf, Weyerhaeuser Timber Co., Longview, Wash.

Patents Committee—T. J. Geissler, 302 Platt Building, Portland, Ore.

Waste Committee—R. J. Schadt, Hawley Pulp & Paper Co., Oregon City, Ore.

Heat and Power Committee—H. W. Beecher, C. C. Moore & Co., Seattle, Wash.

Materials of Construction Committee—S. Gjeisbeck, Artic Bldg., Seattle, Wash.

Fibrous Raw Materials Committee—W. F. Goldsmith, Hawaiian Cane Products Co., San Francisco, Cal.

Paper Testing Committee—V. P. Thorpe, Powell River Co., Ltd., Powell River, B. C.

Pulp Testing Committee—H. K. Benson, University of Washington, Seattle.

Preparation of Fibrous Raw Materials Committee—N. W. Coster, Puget Sound Pulp & Timber Co., Everett, Wash.

Mechanical Pulping Committee—E. P. Ketchum, Powell River Co., Ltd., Powell River, B. C.

Alkaline Pulping Committee—Ralph Reid, St. Helens Pulp and Paper Co., St. Helens, Ore.

Acid Pulping Committee—E. A. Weber, Oregon Pulp & Paper Co., Salem, Ore.

Paper Manufacture—B. T. McBain, 505 N. E. 19th St., Portland, Ore.

A stag banquet on Friday evening offered the proper balance of levity and good fellowship for the more serious program during the day, and was held after visits had been made to the plants of the Everett Pulp & Paper Co. and the Puget Sound Pulp & Timber Co.

All delegates who could remain over were invited to be guests of the Puget Sound Pulp & Timber Co. at Big Four Inn, a scenic resort in the heart of the Cascades on the Stillaguamish river, where luncheon was served on Sunday. Those who preferred could avail themselves of golfing privileges at the Everett Golf and Country Club.

So all in all the Everett hosts did themselves proud and made everyone feel at home and welcome. Mr. Morden is emphatic in his praise of the co-operation given his committee.

Northern New York Supers Meet

Excellent Papers on Wide Range of Important Subjects Presented at Syracuse Meeting

THE spring meeting of the Northern New York Division of the American Pulp and Paper Mill Superintendents Association was held at the Hotel Syracuse, Syracuse, N. Y. on Saturday, April 18. An excellent program was provided for those who attended through the efforts of Chairman H. R. Heuer of the Newton Falls Paper Co. assisted by the secretary and treasurer, R. W. Hynes, Newton Falls Paper Co. and Washburn Weston, American Wringer Co., acting as chairman of arrangements. Registration of members in attendance was in charge of Secretary and Mrs. R. W. Hynes.

The meeting was called to order promptly at ten o'clock. Following a short speech of welcome, the chairman called upon Past President Fred J. Rooney who delivered an impressive eulogy of Michael J. Argy, late superintendent of the Cliff Paper Co., whose recent death was a shock to his many friends and whose inspiring presence was sorely felt at the meeting. A moment of silent tribute was paid to Mr. Argy at the conclusion of Mr. Rooney's address.

The New Shartle Vat

Chairman Heuer then introduced John Hamm, of Shartle Bros. Machine Co., Middletown, Ohio, who presented a paper on The New Shartle Vat. Mr. Hamm described the old type cylinder vat as a box containing some baffles, a weir and a cylindrical screen the general principle of operation being practically the same at present as when the vat was first introduced. The earliest type of vat was of the underflow type but was soon mainly superseded by top flow vats due to operating difficulties experienced with this former type. Vats on some machines running the stronger types of paper at very slow speeds still retained the underflow idea.

The new Shartle vat is of the underflow type but forms under pressure and may aptly be described as a fourdrinier stood on end. A pond is used to create the head, a slice to control formation and an overflow controls both head and formation. Such construction allows the machine to be run as a cylinder or a fourdrinier or a combination of both. A direct advantage in the use of the vat for fourdrinier formation lies in the wider trim obtained through less shrinkage on the dryers.

The new vat is particularly adapted to board mills desiring to obtain bulk with strength. Experience has shown that it is possible in tissue mills to use coarser facing cloth and a longer fiber without serious increase in fiber loss. Such a condition allows a material power saving. An instance was cited wherein a mill through the use of the new vat was able to reduce its liner by a point and a half, thus effecting a saving of $1.50 per ton. They were further able to limit the liner to one vat, whereas previous practice required the use of two vats in order to produce a uniform formation.

Mr. Hamm summarized the advantages of the vat as follows: First, a better and more uniform formation due to control of the vat; a saving of liner is effected through this uniformity of formation. Secondly, higher speeds may be run when aided by an exhauster for evacuating foam and air from the cylinder mold. Third, better drying is possible due again to the uniformity of the sheet. Consequently, the vat results in improved quality of the sheet with an attending reduction of conversion cost.

H. E. McIntyre, of McIntyre Bros. Inc., Fayetteville, N. Y., designer of the vat, then presented a very interesting description of its development. The advantages already given were further emphasized by Mr. McIntyre.

Discussion of the paper brought out the fact that the savings in liner might be attributed to the uniform formation obtained. It was further stated that the new type vat could be used in conjunction with the old type on a multi-cylinder machine, as for instance, the new type vat on liner and the old type for the remaining plys of the board. Samples of paper made on cylinder machines using the new vat were exhibited by Mr. Hamm.

Centrifined Paper

F. K. Becker, Bird Machine Co., next presented a paper on Why Centrifined Paper—and How. Primarily, according to Mr. Becker, mills clean their stock in order that it may look better or work better. Centrifiners at present are being used on all types and grades of paper to accomplish this aim with efficiencies from 50 to 90 per cent. This variation in efficiency is dependent upon a number of factors principally the character and amount of dirt, character of fiber, consistency of stock and the extent of loading. Dirt which is heavier or lighter than the fiber presents no difficulty. Shives, bark and the like, the specific gravity of which is close to the gravity of the fiber offers more of a problem. The dirtier the pulp the more startling becomes the results, although actual benefits may be less than when a small amount of dirt is removed from a high grade pulp.

Rag pulp from its nature usually contains dirt which is less difficult to remove. The efficiency of removal reaches its maximum when a consistency of about one-half per cent is observed. Loading tends also, to lower the efficiency.

The justification for the expenditure necessitated by the installation of centrifiners cannot in many cases be expressed in dollars and cents. It is best expressed in higher standards of quality resulting in better appearance and increased sales as well as a resulting higher level for the reputation and prestige of the mill involved.

Instances were cited by the speaker to illustrate the advantages derived from cleaning with a resulting better "working" quality being imparted to the sheet. Such is the case in condenser paper whose dielectric resistance is lowered by dirt. Another typical example is that of photographic paper, the last word in cleanliness. Clean paper sells faster with a resulting decrease in complaints and adjustments from this source. Hence the centrifiner not only contributes to the value of the paper but also pays for itself.

The operation of the centrifiner was then discussed by Mr. Becker. Its operation may be likened to that of a riffler turned on end and aided by powerful centrifugal force. Heavy impurities are thrown out of the pulp suspension as it is rotated and are then held by the pulp mat at the outer side of the basket. Light dirt is retained by the skimmer ring as the pulp flows out of the basket ready for the paper machine.

In the discussion following the presentation of the paper, the loss of fiber in the pulp mat (which retains the dirt) was questioned. Average operation shows this loss to be about 15 pounds of fiber for each 3,600 pounds passed through the machine. The amount of clay or other loading lost in the pulp mat usually amounts to about 30 pounds per 3,600 pounds of stock run through the machine. The clay thus

removed is usually undesirable material and consists of the larger coarser particles. Hence, in furnishing, slightly more clay must be added on this account. Some slight amount of color is retained by the pulp mat particularly when pigments such as ultramarine are used.

When questioned regarding the practicability of using the centrifiner for de-inking waste paper stock, Mr. Becker stated that such use was not feasible at present. It was also Mr. Becker's opinion that the centrifiner probably could not be used to handle white water on the way to the save-alls. Some mills at present are taking white water in the centrifiners together with good fiber. This equipment however, is effective in getting rid of slime in white water. The capacity of one unit was given as 7,000 gallons per hour.

Following Mr. Becker's paper, the meeting adjourned for luncheon in the main dining room of the hotel.

Handling High Density Stocks

The afternoon session was opened by the presentation of a paper, Pumping of High Density Stocks by C. M. Klepser, Gould's Pumps Inc. The author described in detail the design of the new pump, pointing out the improvements which allowed the handling of stocks of high density. It was formerly felt that in order to prevent clogging, impellers should be made wider at the outlet. Experience proved, however, that this condition actually prevailed at the inlet due to the stock becoming air bound. For this reason, it was possible to narrow the outlet thus improving the design of the pump.

Following the presentation of the paper, Mr. Gargan, engineer of Gould's Pumps Inc., answered questions regarding the use of this new pump. Mr. Gargan stated that it would be difficult to state the effect of temperature upon the operation of the pump. It was likewise stated that at present densities as high as six and one-half per cent were being handled with ease. Mr. Gargan was also questioned regarding linings for pumps, and stated that rubber covered metal is unsatisfactory although rubber covered wood has been used successfully in the chemical industries. Mr. Gargan further stated that ample suction inlet was necessary for efficient operation in order to withstand negative pressures which not only affect pump capacity but also hasten corrosion.

Message from President Magnus

Following the discussion of Mr. Klepser's paper, the chairman read a telegram from National President Carl Magnus urging members to attend the National Convention at Dayton, Ohio, on June 4, 5 and 6. President Magnus expressed his wishes for the complete success of Saturday's meeting. Chairman Heuer further supplemented the president's expressions regarding the national meeting and spoke briefly on transportation arrangements to and from Dayton. Past President Rooney spoke briefly on the benefits derived through attendance at the National Convention and urged the mills to send their superintendents to Dayton.

A New Fourdrinier Wire

R. N. Watts, of the Cheney-Bigelow Wire Works, Springfield, Mass., next presented a paper on Something New in Fourdrinier Wires. The author stated that since the advent of fourdrinier machines the wires have been largely made of copper in the form of brass. As speeds increased, both brass and bronze were used. Mr. Watt then stated that after several years of research on the use of chromium steel for wires, it was found adaptable to such use and is at present on the market by the trade name of "Dur-Wear." It resists abrasion without loss of ductility. As a result of actual mill operation, Mr. Watt cited the following incidents pertaining to the new wire: (1) ran 57 days, average 24 days; (2) suction boxes showed no grooving; (3) gave lowest cost per ton ever given in this mill.

The wire is actually manufactured with bronze warp and brass filling, introducing at various intervals strands of chrome steel. Having greater tensile strength, the chrome wires carry the load and prevent stretch of the weaker metal. Inasmuch as they resist abrasion, they take the wire on the rolls and suction boxes allowing any softer metal to wear only in proportion to the wear on the chromium steel.

Upon being questioned, Mr. Watts stated that the cost of the new wire was about ten per cent above ordinary wires now in use. Figures to date show it gives an increased life of about 33 per cent. Its satisfactory use on deckers could not be definitely assured at present according to Mr. Watts.

Paper Drying Practices

J. O. Woodsome, Jr. read a paper on Present Practice and Future Trends in Paper Drying. The advantages of gradual drying were briefly mentioned by the author who stated that the principle involved was generally accepted by papermakers today. The use and advantages of hoods were briefly touched upon, and the effect of temperature and humidity upon drying was discussed by Mr. Woodsome. As a means of remedying and controlling these conditions, the Minton Vacuum Dryer was developed.

The speaker further stated that experiment had proven that temperature control in drying can likewise be effected by completely enclosing the dryer section and delivering to the dryers large quantities of cool, dry air whose temperature and volume are controlled by refrigerating equipment, heaters and large fans.

The equipment and operation of this new housing method was described in detail. Advantages claimed for this system were as follows: Decreased steam consumption; production and quality maintained irrespective of weather conditions, prevention of drip and roof rot, reduction of operating costs, elimination of dry front and back edges, complete recovery of heat in the vapors, ability to correlate steam and air temperatures and air volume to maintain a proper level for drying temperatures.

J. O. Woodsome, Sr. in supplementing his son's paper stated that the housing method would give a positive control of air surrounding the sheet on the dryers. He stated that the fans used to introduce air into the dryer sections were located about one-quarter of the distance from the front and back ends of the dryer section. The operation of such fans would vary depending upon temperature and humidity conditions produced by changing weather conditions. Mr. Woodsome stated that his system of drying differed from that of the vacuum system inasmuch as in this latter type evaporation is rapid, producing an up-ending of fibers, an undesirable condition.

Delthirna Process

C. H. Kent, of Mansfield Bolton and Kent, next presented a paper on The Delthirna Sizing Process. The development of this system for preparing size was described in detail by Mr. Kent. The actual methods used at present were discussed by the speaker with the aid of a laboratory model of the system. Mr. Kent briefly mentioned the installations at the present time operating in this country. He further stated that at present Delthirna is successfully operating under all types of climatic conditions and on all grades of paper. The advantages of the system were enumerated as follows: Savings in sizing cost, saving in rosin, uniformity, absence of rosin specks, cleanliness, improved color, saving in steam and saving in labor.

Upon being questioned, Mr. Kent stated that when starting up the system no preheating of the caustic solution is necessary. He gave the space requirement of a 1,000 pound unit as nine feet high by eight feet long and three feet wide. The size of the rosin fed to the unit may vary from dust to pieces of grapefruit size. The maximum variation in prepared size was quoted as being not greater than three per cent.

Round Table Discussion

Following Mr. Kent's paper, F. M. Williams of the Williams Apparatus Co., gave a brief talk on his equipment on exhibit at the meeting. Mr. Williams described in detail the new jar mill recently produced by his company for strength testing of wood pulp. This mill may be used for pebbles, balls or rods. Mr. Williams briefly touched upon the use of his size tester, freeness tester and electric sheet dryer as applied to mill control work.

S. C. Meyers, of the Merritt Engineering & Sales Corporation, Lockport, N. Y., was introduced by Mr. Rooney and delivered a short talk on consistency regulators and automatic water regulators for use in paper mills.

In the round table discussion following, R. W. Hynes, of

the Newton Falls Paper Co., described a sizing problem involving the apparent loss of sizing quality from the sheet under conditions which involved no change in the manufacturing operation. It was suggested to Mr. Hynes that by controlling the freeness and density of the stock such a condition would be remedied. Another suggestion involved the use of higher drying temperatures, thereby assuring complete fusion of the rosin. At the close of this discussion, the meeting was adjourned for the afternoon.

Dinner Meeting

The evening's program was opened with a splendid dinner served in the banquet hall. Music, song and dancing were enjoyed during the course of the dinner. Mrs. R. W. Hynes rendered several vocal compositions which were delightfully received by those present. At the close of the dinner, several vocal numbers were given by the Liberty Quartet.

L. D. Post, publisher of **The Paper Mill**, acted as toastmaster for the evening. In his introductory remarks, Mr. Post congratulated Chairman Heuer upon the splendid program provided for the meeting. Mr. Post then briefly traced the progress of the industry in the state from the early 80's up to the present day. Statistics show that at present the tendency is for fewer mills with larger production, the daily output showing an increase of from two ton per day per mill in 1886 to 38 ton per day at present. Figures given by Mr. Post indicate that at present there are nearly as many cylinder machines operating in New York State as there are fourdriniers.

The toastmaster then introduced the speaker of the evening, George W. Sisson, president of the Racquette River Paper Co., Potsdam, N. Y., and former president of the American Paper and Pulp Association. At present, Mr. Sisson is a member of President Hoover's Committee on Forest Timber Waste Utilization.

Mr. Sisson emphasized the importance and indispensability of the paper industry to modern civilization. The development of this industry has been brought about through the broad vision of its leaders during the last 50 years. During that time, it has become industry-conscious and aware of itself and its possibilities. Likewise, it has achieved national standing and won for itself a place of importance in our national industrial life. The industry within itself has become more cohesive during the course of years.

The speaker then raised the question as to the type of man who built the industry. In answering this question, Mr. Sisson described the founder as a typical creative American, an individualist recruited from no special class but representative of the enterprise and genius of our whole nation. He was of necessity an organizer and a man capable of inspiring faith. To emphasize the remarkable development during the past 60 years, Mr. Sisson quoted a memorandum of his father's which gave the price of straw news at 11 cents per lb. to make in 1867. The rapid strides shown by our industry since that date are due primarily to research, invention and practical application, according to Mr. Sisson. These have resulted in new processes, new equipment, greater speed and more application of power.

The speaker further emphasized his faith in the industry, stating that today it is suffering from short sighted, selfish development fostered by promoters desiring to dominate the field in certain grades. Our whole industrial system at present is suffering from disordered digestion due to unregulated adjustment of production to public needs. The stabilization which must come should be a product of industry itself and not of government control or ownership, which, according to Mr. Sisson, is a product of loafing minds and loitering ambitions and would prove a barrier to industrial progress. Such an idea is a "Santa Claus" idea of government, heralded by political bell ringers—their chimes may be heard in Washington as well as in far off Russia, stated Mr. Sisson.

If industry is to solve the problem itself, it must accept the idea of itself as a great social entity, serving the public and with a sense of responsibility which will recognize this fact. Profits and reserves are indispensable if stability and continuity are to be assured. Mr. Sisson felt that the ideal of helpful co-operation and unselfish service is gradually coming to the fore in industrial minds. Superintendents and officials will have to play a large part in such a program if these aims are to be realized. The speaker further stated that the "art of human contact is the greatest art in the world." It must be employed with those associated with us if we desire success and contentment.

The toastmaster then introduced B. D. Millidge, of the Howard Smith Paper Mills, Cornwall, Ontario. The speaker delivered the greetings of his brother papermakers of Canada to the New York Division. It was his opinion that the exchange of ideas across the border represented a very effective arrangement. Mr. Millidge urged attendance at the National Convention in June. The information acquired at such meetings proves an invaluable aid to the manufacture of the best possible product at the lowest possible cost which is the goal of every superintendent, stated the speaker.

Harry C. Kinne, of the Bagley and Sewall Co., Watertown, N. Y., was then introduced by Mr. Post. Following the response of Mr. Kinne, the toastmaster introduced Past President Fred J. Rooney whose enthusiasm for association work is well-known. This enthusiasm, stated Mr. Rooney, gives him enthusiasm for his own work at the mill and is an invaluable source of practical information. The speaker frowned upon excessive economy by mill executives as a means of ending the present business depression. The real cure must come from the installation of new equipment and the use of new methods of production. Such information can best be acquired through attendance of meetings of the type just held. Superintendents meetings serve to stimulate better work, according to Mr. Rooney.

Professor C. E. Libby of the New York State College of Forestry was then introduced by Mr. Post. The speaker referred briefly to the pulp and paper course offered by the college and from which ten to 12 men are graduated yearly. Professor Libby described the equipment to be acquired at the completion of the new pulp and paper laboratory, work upon which has already been started. This equipment will be semi-commercial in nature and will include a 30-inch paper machine.

The toastmaster then called upon Past Chairman J. H. Brougham, who spoke briefly upon the excellence of the program provided at the meeting and congratulated those in charge.

A rising vote of thanks was given Washburn Weston, of the American Wringer Co., for his able work as chairman of the arrangements committee.

D. L. Bellinger

D. L. Bellinger of the Trimbey Machine Works, Glens Falls, N. Y., passed away April 3 at Glens Falls, at the age of 54 years.

Mr. Bellinger was born at Nunda, N. Y. He attended Cornell University and shortly after graduation became connected with the pulp and paper industry as engineer for Finch, Pruyn & Co., remaining in this capacity for about ten years when he became manager of the Carthage Machine Works, Carthage, N. Y. He was later manager of the D. J. Murray Mfg. Co., Wausau, Wis. In 1928 he returned to Glens Falls as manager of the Glens Falls Machine Works, and shortly afterward became associated with the Trimbey Machine Works.

The widow, a son and daughter survive.

As a method of developing and testing new package designs, Robert Gair Co. has just installed a complete retail store unit in one corner of its executive offices in New York City. Using standard equipment of one of the large retail chains, the company has built in shelves, counter and one of the new frozen foods refrigerator display cases and stocked the store with packages in paper, tin and glass just as these products would be displayed in a regular retail store.

The Northwest Paper Co., Cloquet, Minn., has appointed R. C. Johnson district manager with headquarters at Chicago. Mr. Johnson has been associated with the International Paper Co. for the past 18 years.

Pumping of High Density Stock and Other Liquids[1]

By WM. P. GARGAN, Engineer
Goulds Pumps, Inc., Seneca Falls, N. Y.

ONE of the most difficult problems confronting the pump manufacturer for many years past has been the development of a centrifugal pump to handle paper stock of high density, without clogging, and still keeping the power requirements within a reasonable figure.

The reciprocating plunger pump had always successfully handled paper stock, the power requirements were not excessive, and until late years was considered to be the only efficient and suitable type of pump for such service. Built sturdily, of heavy and rigid construction, slow moving parts, with large waterways and large ball valves to give ample valve openings, they have been the principal pumping equipment in hundreds of paper mills, and many of these pumps are still in operation today, with 25 to 30 years of continuous satisfactory service to their credit.

The demand for smaller, lighter and less expensive pumps brought the centrifugal pump into use for this service, and although the ordinary commercial type was ill suited to handle liquids of this nature, the use of open impellers, with large clearances between the impeller and casing made it possible to substitute this type of pump for some services, where the stock was not too dense, and especially where the question of power requirements was of little or no importance. The efficiency of such centrifugal pumps was extremely low, and the proper requirements so great, that they could not now be considered in a modern paper mill, when competition is so keen, that the cost of power is a very important item in the cost of production of a ton of paper.

The older "fan pump," as this type of centrifugal pump was called, was later followed by improved types, with various modifications of design, most of them using open type of impeller, with single, or double suction openings, and some with enclosed type of impellers with large openings.

While these were a decided improvement over the fan pump, occasional clogging still persisted, especially where the stock was dense, or very free, or where fibers were long and material of a stringy nature, and the power requirements were still greatly in excess of the older type of reciprocating pumps. Frequent cleaning of the pump suction was necessary, and on week-end shut-downs, or when for some other reason pumps were shut down for a day or so, cleaning or washing out of the pumps and piping was necessary, before putting pumps back into operation. This was particularly the case, where enclosed impellers were used, as water leaving the stock in the pump and piping left such a solid mass that the enclosed type impeller would not clear itself when starting up.

By persistent experimenting, and thorough investigation of the difficulties encountered with the centrifugal pump on such service, incorporating suggestions made by practical paper mill operators, and working in close co-operation with them, a solution of the difficulty was found, and this type of pump has now been developed to the point where clogging is practically unknown, even when handling the most difficult stocks, and efficiencies comparable to the reciprocating pump are now readily obtained.

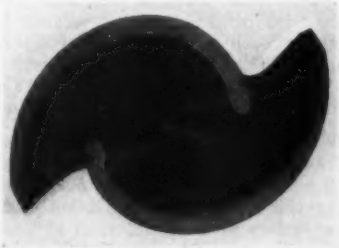
An explanation of the reasons for clogging of an ordinary centrifugal pump, will more easily show why these earlier types were not at all suited for handling materials of this nature. Accepted practice dictated that impellers should be very wide, at both the inlet and outlet of the vanes, so as to readily pass the stock, and avoid clogging. Investigation, and experimenting proved conclusively that clogging never occurred at the outlet, but this always took place at the inlet to the impeller, and that by proper design of entrance, very dense stocks could be successfully handled, without clogging, even though the impeller was of comparatively narrow width at outlet.

The usual type of impeller has numerous vanes, with fairly thin vane tips at the entrance, and usually beginning at or near the diameter of the entrance eye of the impeller. When pump is running, these sharp vanes impart a considerably whirling motion to the incoming stock, and which by centrifugal force, separates the water and thinner stock from the mass, throwing it outward toward the outer diameter of the pump opening or suction pipe, and leaving the more dense stock in the center. This thinner stock at the outside is readily picked up by the impeller blades, but the center of the stream may eventually become thickened to such a point that when it does reach the impeller blades, it is a mass of such density as to effectively close the opening between the blades and cause the pump to cease pumping because of the clogging of the entrance.

Standard impeller

To overcome this condition, impellers were built, using only two or three vanes, and warping or twisting these vanes so that they project outward nearly into the pump suction connection, and carrying the leading edge of these vanes down to where they met each other at the center line of the impeller.

This construction of the vanes gives a screw conveyor, or continuous scoop effect across the full area of the suction pipe, allowing the stock to be picked up uniformly over the entire entrance, and forced into the impeller channels. Water separation of the stock is thus avoided, and stock thickening at the center is entirely eliminated. Another distinct advantage of this design is that the back wall of the impeller is carried outward toward the suction, to form a cone shaped entrance, flush with the inlet tips of the vanes. By securing the pump shaft to the back wall of the impeller, there is no projection of shaft or shaft nut into the eye of the impeller, where materials of a stringy or long fibered nature might find lodgment, to wind or spin, and form a place for stock to adhere to and build up until entrance becomes clogged.



Special impeller

Besides clogging at entrance, another frequent cause of difficulty in handling stock was found to be caused by the pump casing becoming "air bound." This would cause a reduction in the capacity and pressure delivered, and in some cases entirely prevent the pump from delivering any stock. In many cases, pumps that showed a reduced quantity, or no delivery at all, and were thought to be clogged with stock, were upon opening up found to be entirely free at entrance, and the entire difficulty caused by air accumulation in the upper part of the pump casing.

As practically all stock contains more or less entrained air, the amount depending upon the kind of stock, its temperature, and the method of agitation used, the liberation of this air or vapors in the pump casing will allow it to collect in the highest point, seriously reducing the amount of stock handled, and also the pressures developed by the pump.

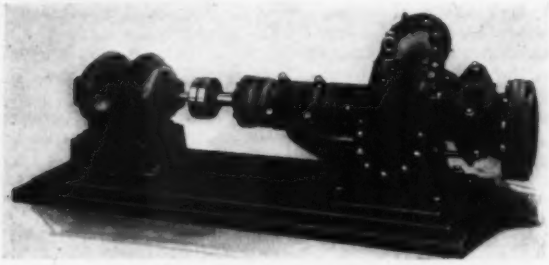
Centrifugal stock pumps having discharge nozzles extending outward horizontally from the bottom, or upwards from the side of the casing leave a possible air pocket in the upper part of the casing, which will not readily vent itself of accumulated air.

This condition can be eliminated by bringing the discharge nozzle outward horizontally from the highest point of the casing. This permits any air to be readily entrained in the liquid discharged from the casing, preventing any possibility

[1]Presented by C. M. Klepser, sales representative, Syracuse office of Goulds Pumps, Inc., at meeting of Northern New York Division of Superintendents Association, Syracuse, N. Y., April 18, 1931.

of the formation of an air pocket, and providing smoother, quieter and constant discharge.

Centrifugal pumps built along the above lines, and incorporating the impeller with screw type vane at entrance, and a top horizontal discharge nozzle, quickly proved the soundness of the design, and have been found to be absolutely reliable for continuous, non-clogging, uninterrupted service, even when handling stock of high density, and also showing efficiencies very much higher than it was thought possible to obtain with centrifugal pumps handling materials of this nature. More than 100 pumps of this design are in service handling paper stock of all kinds, some of them on stock up to six per cent, and in a few cases of even greater density, and without a single instance of clogging having been reported.



Pump direct connected to motor

The high efficiency that is obtained, effects a considerable power saving, and the lower initial cost, suitability for direct connection to high speed low cost motors, small space requirements, all are factors which should be considered in any plans for modernizing, or expansion of existing mills. Practically all the new paper mills built in the past few years use centrifugal pumps for practically every branch of stock pumping, excepting in such services, as for broke stock from the broke beater, or for other like services where the capacity required is much too small for the average centrifugal stock pump to be used for continuous operation.

Difficult Problems Successfully Met

The increasing use of waste paper for making over into wrapping paper, sheathing or board, has introduced another difficulty in pumping this kind of stock. Baled scrap usually contains considerable foreign material such as rags, wires, paper clips, rubber bands, etc., and even though it may be fairly well screened out during continuous beating, in the dumping of a beater or in batch beating some of this material is carried into the pump and frequently causes clogging of the impeller.

Where books or magazines, etc., are used for making up a better grade of paper from waste products by means of a chemical cooking process, the shredding of the waste material does not separate the cloth book bindings, wire clips, etc., and this is carried over into the cookers, or digesters, and must be handled by the pumps. Long stringy material may find a place to wrap or lodge on the vane tips by wrapping across the edge. This forms a convenient point at which successive material can build up, until the accumulation may close the opening between the blades, clogging the entrance and necessitating shutting down the pump for cleaning.

This difficulty was overcome by developing impellers following the same screw conveyor design of inlet, but the entrance edge of the blades instead of being narrow, was increased in size to give a more blunted tip, well rounding in shape where it makes contact with the incoming stock. This vane shape at entrance permits long stringy material to slide by the tip without wrapping or clinging to the vanes, and effectively prevents clogging of entrance, even when handling high density stock.

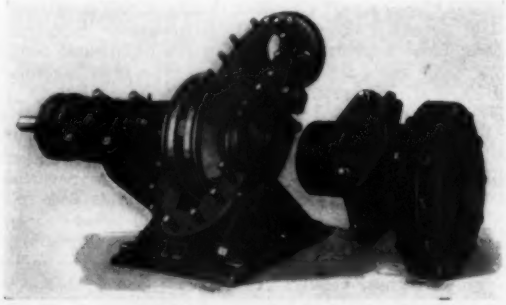
In mills manufacturing heavy wall or insulating board, this type of impeller has been successfully used, even though this stock is usually long fibered, and of a very free nature. While it was formerly thought by board mill men that only a large diameter plunger pump would handle such free stock, it required only a short trial of centrifugal pumps using this type of impeller to prove that it was entirely suitable, and many are now in successful and satisfactory service in such mills.

One particularly difficult stock pumping proposition might be mentioned, to show the adaptability of this new type of centrifugal pump to handling stock of high density, and containing considerable foreign matter of a long stringy nature, where the temperature is also high enough to readily liberate vapors which could quickly cause vapor binding in the pump casing.

This paper mill is located in the lower Adirondack region of New York State, making a high grade paper, and using considerable stock made from old magazines and books. This waste paper is run through a shredder, from which it is conveyed, unscreened, to the digester, or cooker, where it is given a cook using a caustic soda solution. During the cook, the stock is kept in continuous circulation, the pump taking the stock from the bottom of the vessel, and discharging it at high velocity through an orifice plate in the top of the cook tank. The temperature of the stock rises from approximately 160 deg. Fahr. to 205 deg. Fahr. at the finish of the cook, and the density ranges from six per cent to as high as eight per cent. Considerable foreign matter, such as long pieces of book binding, or cloth, and metal binder clips is contained in the stock.

This material was very difficult to handle without clogging, and the older type of fan pumps, with large side clearances had been used for this service, but the power requirements were very excessive, requiring a 60 hp. motor to operate the pump. One eight-inch centrifugal pump, with the special type of round tip vanes on impeller inlet, and top horizontal discharge was put into service on this installation, rated at approximately 1,500 g.p.m. and direct connected to a 20 hp. motor. From the beginning, this pump proved to be so perfectly satisfactory for this severe service, that four additional duplicate pumps were installed a few weeks later and all five have been operating in a very satisfactory manner handling this high density unclean stock, without clogging, and representing a power saving of 40 hp. on each pump or 200 hp. for the entire installation.

In another mill, one of the very largest sulphate mills located in the South, a trial pump was given a very severe test in competitive tryout with two other makes of centrifugal pumps using a very bad suction line to see if it was possible to cause the pump to become "air bound." As a result of the satisfactory performance of this trial pump, and the successful way in which it performed, 27 of these stock



Open impeller pump with cover removed

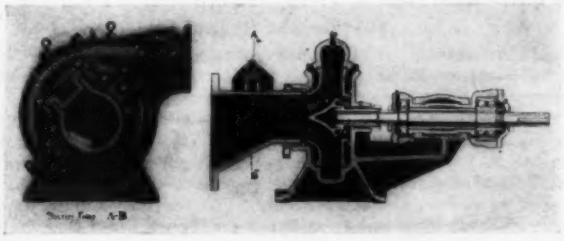
pumps were purchased in one lot for a new addition to the mill, in addition to a greater number of other pumps for handling water, and the various soda liquors used in the process.

Other Desirable Construction Features

In addition to the principal features already described relative to this new type stock pump, that is, the non-clogging impeller, and self venting casing, there are several other unusual and interesting points which may well be briefly mentioned, in order to show how completely this design incorporates features that make it particularly desirable from the mill operator's viewpoint.

The casing is made in two halves, divided on a 45 deg. centerline, with the discharge nozzle and bearing housing cast and machined integral with the lower half of the casing. This construction permits the removal of the upper half of casing without disturbing the discharge pipe connection. The split bearing housing also permits the removal of the shaft, impeller, and bearing assembly as a unit. This bearing assembly consisting of a single, and a double row ball bearing, is contained in a water and dust sealed sleeve assembly, operating in a bath of oil, and the removal of the assembly from the housing does not break the seal, or expose the bearings to dust or dirt even when the pump is dismantled.

The suction of the pump consists of a one-piece flanged eccentric increaser, securely bolted to the lower half of casing, and sealed with a ring packed stuffing box and gland.



Sectional view of Goulds open impeller pump

It also contains a hand hole and cover of liberal size for emergency cleaning, or inspection of the pump suction. Removal of the upper half of casing does not disturb this suction piece, or the suction pipe connections or gaskets. This piece is built with several sizes of suction pipe connections, and the shape of the increaser is such that no air pockets can possibly form, as might be the case if an ordinary standard concentric reducer was used.

Removable and renewable side liners, matching the impeller vane contour, with close running clearances, are securely locked in the pump casing. Where abrasive material from the grinders, or metal clips or other metallic particles entrained in the stock might cause excessive wear of the impeller or side liners, the renewal of these parts can be easily and inexpensively accomplished, and will restore the pump to its original condition.

The shaft is also covered with a renewable shaft sleeve, where it goes through the stuffing box, thus requiring a very small and inexpensive renewal part at this point.

Washout connections to the casing, and in back of the side liners form convenient connections for use when changing colors where stocks of different colors may be run through the pump.

Many of these new type stock pumps have now been in successful and satisfactory service for several years, during which time some of them have been used in handling practically every kind of stock found in the pulp and paper industry, and they can now be unhesitatingly recommended for any of the usual stock pumping propositions encountered in most paper mills. Ordinary ground wood, sulphite, soda, kraft, rag or any other clean stock is readily and efficiently handled without difficulty, and with minimum power requirements. In services where stock is of very high density, or because of the freeness, the foreign matter, or stringy material which may be contained in the stock, special consideration given to the best type of impeller blade design enables offering a pump which will operate satisfactorily on nearly any condition of service.

When requesting recommendations, or quotations for stock pumps from any pump manufacturer, by giving complete information as to the kind of stock, its density, freeness, the nature of any material which may be contained in the stock, the heads against which it is to operate, and the length, size and kind of piping and valves used in the lines, it will greatly assist the pump manufacturer in recommending a type and size of pump which he can safely feel will be the best suited for the service.

The suggestions given by many mill superintendents, engineers, and operators, have contributed in a large measure to the development of this successful stock pump, and the Goulds company is greatly pleased to have the opportunity to express to the members of this organization, its appreciation for their valued assistance, and splendid co-operation.

Soldering Allegheny Metal (18-8 Stainless)

By KENNETH T. MAC GILL
Joseph T. Ryerson & Son, Inc.

WITH the advent of Allegheny Metal as an important commodity in industry, the problem of soldering it has been given much consideration. To those who have attempted it for the first time the process might seem unusually difficult. As a matter of fact, Allegheny Metal can be soldered easily and well. Soldered joints have shown as high as 8,000 lbs. per square inch on tensile pull tests.

A knowledge of the physical properties of both Allegheny Metal and solder is a help in overcoming any difficulty met with in soldering this metal. Some of the properties which make Allegheny Metal so desirable to use, such as its resistance to chemical action and its low ratio of thermal conductivity (being only 48 per cent of iron) are directly opposed to the properties which make ordinary soldering easy.

The strength of a soldered joint is built up to a large extent by the fillet which should be formed on the back of the seam as well as the front where the soldering iron is in contact with the metal. To secure such full penetration it is, of course, necessary that the full width of the seam be heated to a point above the complete liquidation point of the solder. Appreciating the slowness with which Allegheny Metal conducts heat, it is obvious that to solder, using ordinary grades of solder, either greater heat must be used on the soldering iron, or the travel of the soldering iron slowed, so as to give sufficient time for the full width of the seam to attain the proper temperature.

Both of these methods are objectionable as they make the operator deviate from his usual practice, and unless he is unusually skilled the work is apt to be faulty. To overcome this, a special Allegheny Metal solder and an Allegheny Metal dairy solder have been developed. These not only have greater strength than the ordinary solder, but are completely liquid at lower temperatures. The temperatures used in ordinary soldering heat the entire width of the seam to a point where these new solders will penetrate the seam and form the necessary fillet on the reverse side.

In order to secure these results, it is understood that the part to be soldered is free from oxide and grease, otherwise the solder will not adhere. On account of the high resistance of Allegheny Metal to chemical corrosion, ordinary fluxes do not properly etch the surface, so a special flux has been developed which accomplishes this result. On account of the tendency of flux acid to attack Allegheny Metal it is necessary that the workman, when the job is completed, thoroughly wash all surfaces with a soapy or soda solution in order that the finish of the Allegheny Metal will be spoiled.

Tests have shown that a soldered joint with 1/64-inch of solder between the surfaces has much greater strength than a job where the surfaces are only sweated together. It is evident that if the two surfaces to be soldered are tightly clamped together, neither the flux nor the solder can penetrate. Care should be taken if the two pieces must be clamped in order to hold them, that a thin spacer or a slight crimp is put in the metal at the point where the clamp is placed in order to insure sufficient space for both the flux and solder to penetrate.

The Textile-Finishing Machinery Co., Providence, R. I., announces that H. A. DuVillard has been made president of the company to succeed the late E. A. Rusden. Other officers confirmed by the board of directors are: C. F. Tillinghast, vice-president and managing director; W. A. Sterling, vice-president and general works manager, and E. C. Mowry, secretary and treasurer.

Spring Meeting Southeastern Supers

Round Table Discussions and Interesting Addresses on Paper Mill Equipment are Special Program Features

SEVENTY members from seven states met at the Jefferson Hotel in Richmond, Va., April 10 and 11 for the spring meeting of the Southeastern Division of The American Pulp and Paper Mill Superintendents Association.

F. J. Morrison, of Hummel Ross Fiber Co., presided as chairman at the first session on Friday morning.

There was an enjoyable luncheon meeting on Friday, when the members were welcomed to Richmond by Hon. J. Fulner Bright, mayor of the city.

At the dinner meeting, held at the Jefferson hotel, Friday evening, James F. Ryland, vice-president and general manager of the Standard Paper Manufacturing Co., presided as toastmaster. Carl Magnus, national president of the American Pulp and Paper Mill Superintendents Association, addressed the members and spoke of the importance of the national association which is to be held in Dayton, Ohio, June 4, 5 and 6. President Magnus impressed upon the members the need for special co-operation in making the Dayton meeting a success, particularly in view of present conditions.

Round table discussions formed an interesting feature of the meeting. The first of these was conducted Friday morning by A. T. Taylor, of the Bedford Pulp and Paper Co., on the subject of Shrinkage. Another on Friday afternoon led by B. K. Steadman, secretary of the association, took up the subject of Fine Papers. These discussions brought out some very interesting and highly important points.

Doctors

A number of interesting addresses were given during the business sessions. At the Friday morning session, Stephen B. Stafford, of Rice, Barton & Fales Co. spoke on "Doctors." Mr. Stafford compared the construction of different types of doctors, and brought out the particular points which his company recommends in its make of doctors, one of the special characteristics being its flexibility.

Another subject of interest was a paper by F. W. Lodding, of the Lodding Engineering Company on the Lodding doctor.

Mr. Lodding's paper is abstracted in an account of the Mobile meeting of the Southern Superintendents, published elsewhere in this issue.

Stonite Press Rolls

The properties and advantages of stonite press rolls, manufactured by Stowe and Woodward Company, Newton Upper Falls, Mass., were discussed in a paper presented by Mr. W. E. Greene.

Stonite rolls are made by applying a special covering composition to a metal core. The composition consists of quartz, feldspar, ebonite and other constituents, scientifically combined to produce an entirely new material. A stonite roll should not be confused with either a rubber roll or a granite roll, for it is neither; as a material it is distinct from both, said the speaker.

As its name implies, however, it is stone-like in character. When ground and finished, it closely resembles granite in appearance, in texture and to the touch. It is fine and even in grain, very hard and porous. It is unlike granite in that it contains no mica which is the weak element of that stone. Consequently, it will neither pit nor scale. Being of uniform hardness and structure, it wears even with no pock-marking of the surface. It is made expressly to give the utmost efficiency in a top roll.

There is no pick-up of fibers on stonite rolls, Mr. Greene said, due probably to their evenness of grain and uniform structure. They have been known to run all day without leaving a handful of fiber in the doctor. They can be ground and finished to the exact working texture required and will remain at that texture without glazing over or polishing as readily as other surfaces from the operation of a doctor.

As the stonite covering is applied to a metal body, the roll can be made in any desired weight by regulating the amount of body metal. It can be made with a large diameter and still kept light in weight. It can be applied to the metal body in any thickness but for all practical purposes, three-quarters of an inch to an inch is ample, said Mr. Greene. The covering is plastic and can be securely vulcanized to the body. Thus rubber-covered rolls and brass rolls can be recovered with stonite composition, making the purchase of new metal bodies unnecessary.

Stonite can be used in any top position, on most any grade or weight of paper. It is particularly valuable for newsprint and for the all-sulphite sheets, light or heavy, where the greatest trouble is experienced in sticking, the speaker said.

New Enterprise Drive

H. A. Harvey of the Enterprise Machine Company, Middletown, Ohio, read an interesting paper describing that company's new synchronized compensating drive which has recently been announced to the trade. An illustration of this new drive with a short description was published on page 59 of the April issue of THE PAPER INDUSTRY.

The Vertical Hydrator

At the session on Saturday morning, George Engert of Love Brothers Company read a paper on the Fritz Vertical Hydrator. Mr. Engert's address follows in toto:

The Fritz Vertical Hydrator was developed about eight years ago to brush out and hydrate stock in a continuous operation, and to eliminate as nearly as possible all the faults of the so-called modern beating engine of today.

The beater was developed some 170 years ago and practically everything has been done to make this machine more efficient.

Tackle for rolls and bed plates of every description has been tried. Rolls have been speeded up and slowed down. Various densities of stock have been tried to make the beater fast circulating and high density, but we still have the beater of 170 years ago.

The Fritz Vertical Hydrator consists of a series of ten stationary and revolving discs, stands 14 feet high; requires 18 to 20 feet of head and one-third the floor space of a beater to erect.

The ten revolving discs are double keyed to a four-inch vertical shaft revolving at 300 r.p.m. opposite ten stationary segments. The worm screw adjustment at the bottom of the machine raises or lowers this shaft from one thousandth to fifty thousandths clearance; this enables you to get any degree of brushing or hydrating you wish. The machine once adjusted, maintains its setting indefinitely, or until changed by operator.

The stationary and revolving sections are cast chrome nickel semi-steel. The revolving discs are 31 inches in diameter, 4 inches thick at center, and taper to one inch thick at outer edge, having 59 tapering brushing bars 9 inches long.

The revolving discs are wood filled with the inverted wedge-type filling which cannot raise or become loose.

The stationary sections have 52 similar bars 9 inches long, making 111 bars to each section; as there are ten of these sections, the machine has a total of 1,110 brushing bars.

The stock is pumped to the intake at the top of the machine from 10 to 20 pounds pressure. As the stock passes through the ten sections under pressure in a small stream, it is subject to a tremendous brushing and rubbing action that is impossible to get in any other type of machine.

Due to the centrifugal action of the stock under pressure, water is automatically forced into the fibers without creating any heat.

The Hydrator will brush out and hydrate in a continuous operation or can be piped up to circulate a chest of stock, at the rate of six to seven thousand pounds of stock per hour according to kind of stock being treated, using 75 to 125 hp.

Now to get back to how the Hydrator eliminates the faults of the beater. When the beater is loaded, with whatever furnish is being used, water must be added. This water is regulated to the best of your ability to make the right consistency, but do you get every beater the same?

After the beater is loaded, the roll is set to what is thought to be right brush. This is sometimes done by using a stick or valve hook, placing one end on the bed plate, the other end to the ear to see just how hard the roll is hitting as was done 170 years ago, or by watching the ammeter on the wall to see how the motor is pulling regardless of tight, loose or slipped belts, or poor lubrication of roll journals.

Various ways are used today to tell when the beater is ready, such as freeness, strength, and consistency tests, also the old thumb and rule method of feeling the stock.

The use of the freeness tester to control the degree of beating or hydrating to get the highest strength possible out of beaters and jordans is very misleading at times.

Freeness testers not only measure the drainage of water from the sample of stock, but also measure the length of fiber.

The beater man at any time if pushed for stock can increase his cutting and give you the correct freeness reading, but there will be a decided drop in the various tests and quality.

Freeness tests on stock run through the Hydrator show very little increase in slowness but there will be a decided increase in strength.

This means we are getting 100 per cent brushing and hydrating and are doing no cutting.

The beater is run from one-half to seven hours according to grade of sheet and quality desired which causes a decided rise in temperature the longer the stock is left in the beater.

When the beater is dropped, more water is added to empty the tub, causing variation in weight on the machine, also all tests.

The stock leaving the beater is not brushed or hydrated enough for good formation, so we have to resort to the jordan for some cutting. The harder we set these jordans up metal to metal, the more power is required and the higher the temperature rise on the stock.

Heat is one of the most objectionable conditions existing today in mills using free stock. It causes more wild and uneven formation which in turn causes a wide variation in all tests.

The stock pumped to the Hydrator must be not less than five per cent consistency to get good brushing action. This applies to the longer and harder fibers such as kraft.

The machine is set for the degree of brushing and hydrating desired. The stock passes through the machine in a continuous flow. The consistency does not change. There is no metal to metal contact—so naturally no heat is created. The Hydrator positively will not heat the stock, discharging it at the same temperature as at intake.

As the setting of the discs remain the same and cannot back off as set up, this takes the guess out of setting the beater roll.

However, the machine setting can be changed at this time with machine in operation.

In pumping the stock to the Hydrator at five per cent consistency, unless more water is added to this stock it will discharge from the machine at about nine to ten per cent consistency. This may sound strange, but it is due to the high centrifugal force of the stock and water under pressure that drives the water into the fiber. Necessary make-up water is added to the stock through a water line at top of the machine.

There are a number of different methods of refining stock in vogue today, but the problem of the papermaker has been to control this degree of refining. Most of us agree that the prime essential of any method is the degree of brushing and hydrating we are able to get without excessive cutting in the jordans and beaters. Formation obtained by hard jordaning and cutting makes a hard brittle sheet with a low fold, Elmendorf or tear, also low tensile test; this is all due to cutting up the small bunches of fibers, packing of them close together, some of them on end, instead of weaving or matting them together as would be done with well brushed out stock.

Stock refined with the Hydrator brushes out all of these little bunches or bundles of fibers into individual and original length.

This stock can be formed into a well-closed sheet that naturally increases all tests from 15 to 40 per cent. Ordinarily, the Hydrator replaces six beaters and half the jordans, thus making a decided saving in horsepower.

The machine is very rugged, very quiet in operation, with no vibration whatever.

Standing 20 feet away from the direct connected motor-driven type, it is hard to detect whether machine is in operation or not.

The simplicity of design, the ease with which it can be adjusted to any degree of brushing or hydrating, is the inventor's answer to a long felt need in the paper industry of today.

The maintenance cost of the Hydrator is very low compared to beaters and jordans. The revolving discs run three years before needing grinding, and will last for seven grindings. The stationary segments have shown practically no wear in the eight years of operation, and we do not know at this time just how long they will run before a grinding is needed. However, these segments can be ground the same at the revolving discs.

Fourth All-Ohio Safety Congress

Pulp and Paper Section Holds Two Interesting Sessions with Presentation of Safety Methods and Mechanical Safeguards

WITH a program devoted to the discussion of both mechanical safeguards and the general problem of educating employees in safety methods, the fourth annual All-Ohio Safety Congress met at the Neil House, Columbus, April 21 and 22 with a larger attendance than any of the preceding meetings.

For the first time since the organization of the All-Ohio Safety Congresses, two sessions of the Paper and Pulp Section were held. The chairman of the section, E. E. Grant, director of personnel of the Crystal Tissue Paper Co., Middletown, announced that he was very well satisfied with the interest shown also the attendance, and believed that much had been accomplished in promoting safety work in the industry.

A high light of the first day's session was a discussion of "Inaugurating a Safety Program" by D. C. Hunter, director of personnel and safety, Oxford Miami Paper Co., West Carrollton.

Inaugurating a Safety Program

Mr. Hunter detailed the methods he had used in inaugurating a safety program in their factory. The work was started just a year ago and he already points to a reduction of 58 per cent in injuries and 33 per cent in lost time resulting from accidents, during the first quarter of 1931 as compared with the same period last year.

The speaker stated he had no paper mill experience prior to accepting his present position. The mill had made no effort to institute a safety program, and the only activity along that line was the existence of a safety committee which met at irregular intervals. No records were kept of accidents and there was no means of ascertaining the cost of accidents aside from the records made up for the Industrial Commission showing compensable accidents. But the rates for compensation steadily increased until the management finally decided to call a halt.

In establishing a safety program, Mr. Hunter first set out to sell the management the necessity for such organization and the need to make it of large scope. In that way he secured the active aid and co-operation of the management in backing up his program. He found the mill manager interested in safety and this fact was of great assistance to him in carrying on the work. The first step was a general meeting of superintendents and foremen at which time the whys and wherefores of the campaign were explained.

The first thing in the safety program at the Oxford Miami plant was the placing of guards on all dangerous machines; second, the compilation of accident records. The collection of records was felt to be most important, in that therein could be found the essence of the prevention program. All accidents were analyzed as to time, place, nature, etc. It was found that three accidents within a week occurred in the same department between 7 and 9 o'clock a. m. A study of the situation revealed that through some readjustment of work the department in question was especially crowded during those two hours and it was obvious there was too much haste, resulting in accidents. The establishment of a first aid department was another important step. A file system was installed where the physical examination of each employee was kept together with other important information. A record is kept on the card of each visit to the first

aid department. Injuries are divided into minor, requiring first aid only, and major, or lost time and compensable accidents. A system was instituted of compelling reports on all minor accidents and discharge was threatened where employees with slight injuries failed to call on the first aid department.

Another step was to keep the foremen interested in the safety program which was carried on largely through personal contacts. Mr. Hunter personally visited the various departments and had frequent talks with the foremen. In that way he found out the individual problems and the attitudes of each of the foremen and was in a better position to handle them. One of the results from these personal contacts was to have more detailed reports of accidents. In this way, the foremen radiated interest to the other employees. It has been found that monthly reports of accidents classified by departments will be a great help in creating proper spirit among department heads.

The program as carried on after a year, which has been very successful, has a number of ramifications. Bulletin boards, rule and safety books, pamphlets and folders, contests and special campaigns, and safety committee meetings are all being used to carry on the campaign.

The Value of Accident Reports

Another interesting speaker at the first session, was W. Graham Cole, director of safety service of the Policy Holders Service Bureau of the Metropolitan Life Insurance Company. He advocated the use of facts and reports in any accident prevention campaign which is instituted and declared that the first step is to sell the management on the matter of safety. This accomplished, the sale of the idea to the superintendents and foremen is a comparatively easy task.

Mr. Cole declared that in sizing up a safety problem in any plant it seems to present quite a problem, but the tabulation of reports resolves the matter into a much easier and simpler task. He said that 80 per cent of industrial accidents result from four or five major causes. Likewise, the greater number of accidents occur in certain departments which fact once realized further simplifies the problem.

The speaker defined an accident as a happening where injury to employees, damage to plant, material or equipment, or the lowering of efficiency in a plant takes place. The prevention of such occurrences is the essence of safety work.

Mechanical Safety

At the second session on Wednesday morning, the subject of mechanical safety was discussed from the viewpoint of a manufacturer of paper mill equipment. Allen Heyer, of the Black Clawson Company, Hamilton, Ohio, spoke on the subject "Safety as Applied to Paper Machines." Mr. Heyer stated that every improvement in machinery either in the matter of labor saving or in speed has made for progress in safety work. Thus the installation of a continuous oiling system on certain machines keeps the floor free from oil and grease, making for safety and cleanliness. The anti-friction bearings which have also been installed in most of the paper-making machinery also increase safety in operation.

Mr. Heyer also described the various steps taken to properly guard machinery and asked for suggestions from those in attendance.

Following this address, there was a general discussion in which it was brought out that about 85 to 90 per cent of the accidents are the result of the failure of man, either the employee or the foreman, superintendent or the one higher up. Cleanliness and light are the two more important factors to be emphasized in the inauguration of a safety program.

At the close of the session, officers for the ensuing year were elected. Ernest Augustus, of The Mead Corporation, Chillicothe, was made chairman; D. C. Hunter, director of personnel and safety, of the Oxford Miami Paper Co., West Carrollton, was named vice-chairman, and Roy J. Murbach, safety engineer of the Gardner-Harvey Co., Middletown, was made secretary.

Link-Belt Co., Chicago, announces the appointment of William L. Hartley as district sales manager in charge of the Detroit territory. His new location in Detroit will be 5938 Linsdale Ave., telephone number, Euclid 1000.

New Catalogues, Books and Publications

Bailey Meter Co., Cleveland, Ohio—A new bulletin entitled Dieform Compression Fittings which is now being distributed by this company, describes the application, advantages and installation of dieform compression fittings when used with copper or steel tubing for small service lines. The material is recommended for piping where many bends must be made and where an absolutely tight, neat appearing trouble free installation is required. One section of the bulletin describes dieform test water cooling coils with which representative boiler test water samples may be easily and efficiently obtained. There are many illustrations in colors and installation diagrams.

Eastman Kodak Co., Rochester, N. Y.—Noteworthy examples of photography as used for various business purposes fill the pages of Applied Photography, this company's new magazine which made its appearance the first of May. This is one medium of an extensive program which the company is pursuing to assist industrial and business firms in applying photography effectively in research, manufacturing, advertising and sales work. Each issue presents a different business objective, and illustrates the aid of photography in attaining it. The first issue deals with the question of obtaining photographs for advertising and sales purposes.

Elgin Softener Corp., Elgin, Ill.—Boiler Water Conditioning is the title of a new booklet printed in two colors, in which the various problems in the conditioning or treatment of boiler water is discussed. A number of illustrations show various types of scale and sludge, corrosion and pitting, embrittlement with a large number of blue prints showing various methods of gravity and pressure feeds for chemical control, the application of sludge deconcentrators to typical types of boilers, the schematic arrangement of deconcentrator and heat exchanger and the zeolite deconcentrator combination. Copies on request.

Foote Bros. Gear and Machine Co., Chicago—A late publication by this company is No. 301 on IXL Hygrade Worm Reducers. This booklet takes up the evolution of worm gearing down to the latest developments. One section is devoted to the customer's problem wherein the principles and advantages of the Hygrade Worm Gear Speed Reducer are presented in a convincing manner.

D. O. James Mfg. Co., Chicago—This complete line of continuous tooth herringbone reducers and gears is covered in catalogue No. 136. Dimensions, prices and horsepower ratings according to speed and ratio are included, also photographic illustrations of many reducer installations.

Jeffrey Manufacturing Co., Columbus, Ohio—A new spiral conveyor catalogue, No. 495, just issued, gives a complete description and prices of Jeffrey spiral conveyors with accessories suitable for most any requirement or condition. Six principal types are listed: sectional flight, helicoid, mixer, cut flight, ribbon and cast iron for conveying coal, cement, soda ash, lime, powdered clay and similar material of a loose or bulky nature.

Link-Belt Company, Chicago—A Saving at Every Turn is the subject of a new illustrated book which describes the Link-Belt line of silent chain, roller chain, herringbone gears, herringbone speed reducers, worm gear speed reducers, steel and malleable chains and P.I.V. Gear. There are many illustrations of installations of these positive drive units with accompanying description. Copies upon request.

New England Tank and Tower Company, Everett, Mass., New York office at 50 Church street—Catalogue No. 31 is a description of "New England" agitator drives and illustrated profusely with reproductions of photographs, diagrams and tables. This company specializes in the manufacture of the most modern types of agitator drives and equipment of all types. Users of agitator drive units for transmitting power from prime movers to agitators, stirrers, and mixers will find the catalogue a serviceable one.

Schutte & Koerting, Philadelphia—A new bulletin No. 6-A covering the SK line of spray nozzles, contains one chapter devoted to the arrangement of nozzles frequently used in paper mills. A diagram illustrating an arrangement of nozzles on a paper dryer is shown. Many other uses in paper mills are mentioned in the text.

BOOK REVIEWS

Manual of Paper and Stationery Export—Under the title "Handbuch der Papier-und Schreibwaren-Ausfuhr," Wilhelm auf der Nöllenburg has compiled and Carl Hofmann GmbH., Berlin SW 11, has published a useful volume of information concerning the paper markets of the world, the subject being treated systematically with regard to the import regulations of most of the countries in Europe, North and South America, Asia, Australia and Oceania. The book is a valuable compendium of information concerning the types and sizes of papers preferred in the various countries. In an appendix forms are given of commercial documents relating to shipping in English and Spanish and there is a short dictionary of shipping terms in English and German. The price of the book is 7½ Marks.

Directory of Paper Makers of Great Britain and Ireland for 1931—This is the fifty-fifth annual issue of this useful directory which is issued at 5s. 6d. by Marchant Singer & Co., publishers, 47, St. Mary Axe, London, E.C.3. In addition to an alphabetical list of paper and board mills in England, Scotland and Ireland, the directory includes a most complete enumeration of watermarks and trade names besides miscellaneous information on standard names and sizes of paper and board and the Paper Trade Customs of the organized paper industry associations of Great Britain and Ireland.

The Bristol Company, Waterbury, Conn., has removed its Pittsburgh office to 436 Seventh Ave., telephone Atlantic 1995.

Practical Helps for the Mill Man

How Suction Boxes Should Oscillate

THE modern oscillating suction boxes are installed in two different ways. These ways are shown diagrammatically in the sketch. Figure A shows the boxes being shifted as a group, first one side and then the other. Figure B shows

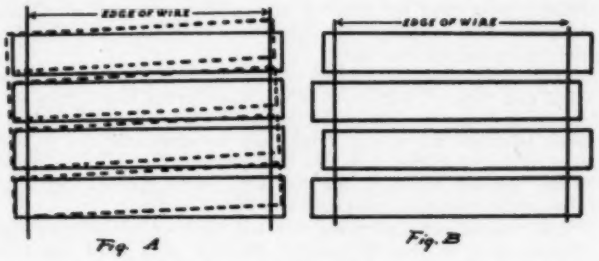


Fig. A Fig. B

the boxes shifting in the direction of their length across the wire, usually with half going one way while the alternate ones go the other. It has been determined with fair certainty that while the method in figure A really tends to free the wire from the boxes and prevent scoring, the method shown in Figure B often merely puts a strain on the wire and the wire continues to stick to one or more of the boxes and the grooving goes on.

Uses of Pulverized Iron for Buildings and Repairs

PROBABLY the best and at the same time the simplest and most convenient way to permanently waterproof concrete, brick or masonry is by what is known as the iron method. This system works equally well on either the inside or outside of both old and new buildings.

The iron used for this purpose is in a finely pulverized state and is simply mixed with water and applied with a brush. Detailed instructions for doing this work as well as complete tables for estimating requirements are easily obtained.

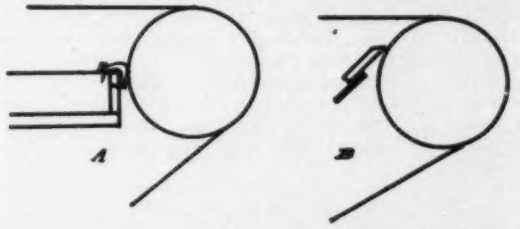
The principle involved in this method of waterproofing can be readily understood. The water in the mixture when it soaks into the concrete carries these fine iron particles along with it and when they rust they swell up to several times their previous size and seal the pores completely. This rusting process is hastened by the addition of other chemicals to the iron as otherwise it would be too slow for practical purposes. As iron oxide or rust has little or no tendency to change under normal conditions, it does not deteriorate with age, and consequently a wall or floor waterproofed with this material will remain waterproof permanently. This coating of rust may be covered by a plaster coat troweled on or by a brush coat of pure cement mixed with water in order to restore the original color. Contrary to what might be expected, this undercoat of rust has no tendency to gradually cause a discoloration of this last coat.

Another use for this iron is for repairing broken walls and floors and filling cracks. In this case it is not used for its waterproofing qualities but for its ability to create a perfect bond between the old material and the new material in the patch. For the patch itself, some iron is mixed in with the usual concrete ingredients. No better evidence can be had of how well the iron works for this purpose than by cementing two pieces of brick together with it. If properly done they cannot possibly be pulled apart.

Still another use for pulervized iron is as a floor hardener. For this purpose slightly larger particles are used. The iron is scattered over the top coat before it has set and then troweled in. This simple and inexpensive treatment not only gives a floor a wearing surface which will stand several times as much hard usage as it otherwise would but makes it practically oil proof, waterproof and dust proof as well. In the Merchandise Mart in Chicago which is the largest building in the world a carload and one-half of this floor hardener was used.

The Breast Roll Doctor

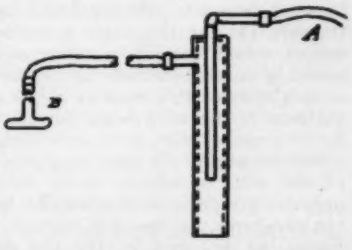
MILLS troubled with short wire life, especially where the machines are old, would do well to check up on the breast roll doctor. The sketch shows at (A) a condition which often occurs in one form or another. Sometimes the edge of the save-all which goes against the breast roll is used as a



doctor, and when it is padded with felt or jacket, the friction on the breast roll is simply ruinous on the wire. At (B) is shown a simple form of breast roll doctor which is recommended by one superintendent. It consists merely of a board with a beveled edge with the heel of the bevel up. If this is placed across the frame of the machine with possibly one or two light springs to keep it down, it will effectively keep stock from going around the roll and will represent a minimum of friction on the breast roll.

Taking Dust Off of Dryer Doctors

ESPECIALLY on fast speed news machines where there is a doctor on the first dryer (counting from the wet end) it is found that dust piles up on this doctor, and when the machine has been running a long time, particles of this dust break off and fall against the paper, resulting in a slug when the paper goes through the calenders. The device shown in the sketch will remove this dust without waiting for a break. It consists simply of a piece of three-inch pipe with a cap on one end. A smaller pipe pierces



this cap and extends well down into the three-inch pipe. Another pipe is set into the side of the three-inch pipe. To this is attached a hose with a nozzle similar to a vacuum cleaner attachment—shown at (B) in the sketch. A compressed air hose (A) is attached as shown. When the air is turned on, the nozzle (B) can be run across the doctor and it will suck up the dust which will be discharged through the open bottom of the three-inch pipe.

M. B. MacNeille, formerly with Fairbanks, Morse & Co., has been appointed western sales manager of Dayton-Dowd Co., Quincy, Ill., with headquarters in San Francisco.

Southern Supers Meet at Mobile

Members Enjoy Splendid Program and Make Tour of Paper Mill at Spring Meeting

THE Southern Division of the American Pulp and Paper Mill Superintendents Association held its spring meeting, April 17 and 18, at Mobile, Alabama, the sessions taking place in the historic Battle House.

The morning of the first day was given over entirely to the presentation and discussion of several important and highly interesting papers on paper mill subjects.

The first paper to be presented following a short business session, was read by W. E. Greene of the W. E. Greene Corporation, New York, on the subject of Stonite Press Rolls. A substantial abstract of Mr. Greene's paper will be found in an account of the Southeastern Division Superintendents meeting published elsewhere in this issue.

Following a brief discussion of Mr. Greene's paper, P. M. Foster of the Beloit Iron Works, Beloit, Wis., read a very instructive paper on Suction Press Rolls.

Suction Press Rolls

In discussing this subject, Mr. Foster touched on the fundamental principles underlying their use in modern fourdrinier and cylinder machines.

The efficiency of a paper machine depends to a large extent upon the cost of removing water from the wet web of paper in the press section. Before suction press rolls were adopted, the methods of removing water at this station passed through the period of first using a hard metallic covered roll coworking with a soft rubber covered roll, the hardness of the latter gradually being increased from a comparatively soft rubber to a hard rubber with correspondingly higher nip pressures.

Nip widths increase directly as the square root of the pressure applied per lineal inch and also directly increase with the plasticity of the rubber cover. In order to remove more water, it was therefore necessary to first increase the density of the rubber covering. For a given weighing of the roll, water removed from the sheet of paper increases with the nip pressure per square inch.

With the soft rubber roll the nip width would increase rapidly with the weighing, and due to the wide nip area and consequent comparatively low unit pressure, only small quantities of water were removed. Greater water removal, therefore, called for greater weighting which in turn called for harder rubber covers.

This development did not occur without complications arising as direct results, said Mr. Foster. In the first place, the sheet was literally ironed out, thus destroying in part the formation of the fibers. The wet sheet could not physically stand up to the extreme pressure and rolling effect produced in the nip of the hard press rolls. Particles of fiber would be brushed from the soft sheet and would become embedded in the felt, causing the latter to be filled up. Also, water removed would not drain away rapidly enough, and water would be carried through the nip between the rolls, resulting in wet streaks and troubles at the dryer section. The hard surfaces of the rolls being forced together under extremely heavy pressure also cause excessive wear to the felts.

Suction press rolls have come into use because of a demand of the mills to remove more water from the wet web of paper in the press section without having to resort to greater nip pressures, the speaker related. In the case of a suction press, the pressure of the top roll with the bottom roll squeezes the water from the wet sheet, and the water that is forced back from the nip is immediately pulled out of the way by the vacuum within the roll, thus making room for more water to be forced out, thereby allowing no water to be drawn through the nip. The possibility of streaks is eliminated and the felt is kept drier and in better condition to absorb the water as it is pressed out.

It was not meant to be inferred that the vacuum fails to remove some water from the sheet. If that were true, a suction press would have to be weighted the same, or rather have the same nip pressure as does a plain press, but this is not true, Mr. Foster said. Examples were cited of moisture tests made before and after the installation of rubber covered second suction press rolls, which showed that following such installations, machine speeds were increased with greatly reduced nip pressures, more water removed and consequently large reductions of steam pressures in the dryers.

It was recalled that an improvement of one per cent in bone dry content at the press is equal to more than a saving in the steam required to dry one per cent more moisture from the sheet in the dryer section. Mr. Foster quoted from a bulletin published by a prominent felt manufacturer: "A reduction of the percentage moisture content of the sheet entering dryers by only one per cent saves one-fourth to one-half of the entire felt bill. An increase of five per cent, say 26 to 31, saves $1.06 for every ton of paper. In a 100-ton mill, this would mean a saving of $32,000.00 a year."

A saving in power was shown to be effected, in that the power required for a suction second press installation (including that used for driving the vacuum pump) just about balances that required for operating two plain presses replaced by the suction unit.

The rubber covered suction roll permits the use of the same kind and type of felt as with the plain press and in the example referred to earlier in the discussion, showed no tendency to mark the sheet. This may be accounted for in the fact that the drilled holes in the rubber cover tend to close when passing through the nip area, thus eliminating any chance for "shadow marking" the sheet.

The rubber covered press roll has another advantage, Mr. Foster said, in that it permits the use of a hard top roll without causing reduced felt life. This top roll can be covered with one of the recently developed sheet repelling rubber compounds. According to all reports, it was said the sheet will not stick to this type of top roll, thus eliminating the "pick-ups." With a hard roll on top of the sheet, finish is improved, fuzz is laid down and the printing qualities are enhanced.

The Lodding Doctor

The object of the Lodding doctor and its application to the various rolls of the paper machine were discussed in a paper presented by W. E. Greene of the W. E. Greene Corporation, New York, representatives of the Lodding Engineering Co., Worcester, Mass.

In order to overcome the difficulties which attend the use of old-fashioned doctors on press rolls, dryers and calender rolls, the Lodding doctor was designed, said Mr. Greene. And in undertaking the task, the inventor, F. W. Lodding, kept the following fundamentals in mind:

1. That all rolls on a paper machine are machined and ground and, except in a few cases where crowns are used, they make a good straight edge, and to so construct the doctor that it would be as straight as possible within reasonable limits.

2. To compensate for crowns, natural deflection and misalignment by making the doctor self-aligning.

3. To make use of a doctor blade that would last a long time and as it wears to compensate for same by simply moving it out, and merely turning a screw to accomplish this.

4. To be able to change blades without removing the doctor from the machine, or take it apart for such a change.

5. To use as little pressure as possible in obtaining a good fit.

On press rolls, for instance, the weight of the heavy doctor back has been relieved in the new type, and as the blade in the latter is either made of flexible stainless steel or bakelite, depending upon the type of roll surface, a perfectly watertight fit is obtained with only a few ounces of pressure per lineal inch. The doctor blade itself is held between two plates, allowing only a small overhang, thus avoiding the danger of unduly bending it. Tests have proven that with the old heavy construction doctors, as high as 15 hp. is consumed by the braking action of the doctor on the top roll, to say nothing of the tremendous wear and tear to the rubber covering as well as to press felts. This unfavorable action is reduced to a minimum with the Lodding doctor, the speaker said, and the actual saving in horsepower is claimed to more than pay for its cost of installation within a few months. Among other desirable results obtained by their use on the presses, is the

ADVERTISING PAGES REMOVED

total absence of the danger of scoring the roll surface. Wire rolls in the fourdrinier part of the paper machine are delicate places, and doctors are needed that will fit here with only a few pounds pressure, the wear and tear in the wire being bad enough without having to overcome the resistance of a brake on the breast roll in order to rotate it.

A dryer doctor should fit automatically with as little pressure as possible, for there are many doctors used in this section. In one news mill, said Mr. Greene, the total power consumption of the doctors alone was considerably more than 40 horsepower. The Lodding doctor employs a tempered Swedish steel blade two and one-half inches wide for this service. As the blade is exposed only one inch outside of its supporting members, it is possible to obtain from it very long life and it can be moved out by simply turning a nut conveniently located on the tending side of the machine. This type of doctor blade when properly applied acts like a burnishing tool and will in time polish the dryers to a mirror-like finish. Changing the blades is likewise a simple operation, an old blade being easily ejected automatically and a new one inserted in a few minutes.

While power losses on the calender rolls due to heavy pressure on the doctors are considerable, of far more importance is a design that will obviate the danger of scored rolls. Again, pressure plays an important part, as it is obvious that in the total absence of pressure there could be no scoring. The Lodding doctor accomplishes this result with a recorded pressure of as little as one-tenth pound per inch, Mr. Greene stated.

Inspect Southern Kraft Corp. Plant

Friday afternoon was given over entirely to an inspection of the Mobile plant of the Southern Kraft Corp. A complete description of this very fine paper mill was published in the October, 1929 issue of THE PAPER INDUSTRY. The article entitled "Making Industry," was written by THE PAPER INDUSTRY'S staff representative, Harry E. Weston.

New Officers

Saturday was given over to a discussion of papermaking problems in the forenoon, with sight-seeing tours and golf taking up the afternoon. The meeting closed with a banquet Saturday evening at the Battle House.

New officers elected for the coming year are: M. C. McDonald, of Monroe, La., president; J. L. Richardson, Tuscaloosa, Ala., first vice-president; C. L. Crain, Panama City, Fla., second vice-president; S. M. Dodge, Moss Point, Miss., third vice-president; J. M. Murray, Bogalusa, La., fourth vice-president; Albert Rozyskie, Panama City, Fla., fifth vice-president, and J. L. Whitfield, Monroe, La., secretary-treasurer.

The next meeting of the association will be held at Monroe, La., next October.

New Dual Frequency AC Drive for Supercalenders

The General Electric Company announces a new type of low frequency generator which makes it possible to apply the dual frequency supercalender drive on all commercial power voltages and frequencies.

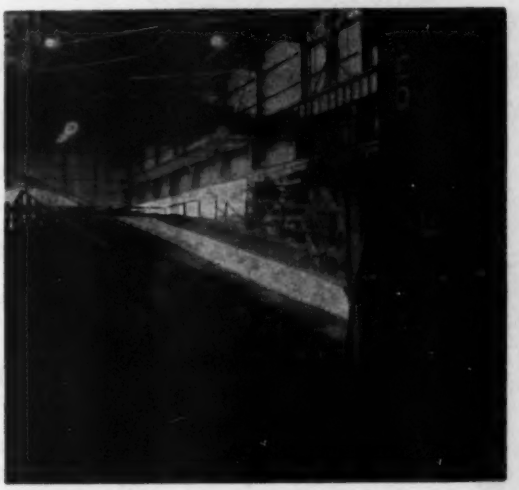
Heretofore and from an economic standpoint, the dual frequency drive has been limited to low voltage installations, the voltage values not exceeding 550 volts. The dual frequency method of supercalender drive is a system whereby one alternating current motor is used to drive the supercalender. Slow speed operation for threading is obtained by operating the motor from a low frequency power source.

This system of drive is particularly suited for driving a battery of three or more supercalenders. Considerable saving in cost may be made on such an installation as compared with the conventional two-motor type of supercalender drive. The two-motor drive consists of a large main motor which drives the supercalender at operating speeds and a small motor, usually geared or chain-connected to the main motor shaft through an over-running clutch, for driving the supercalender at threading speed.

Hence, the elimination of the small motors with their gearing and over-running clutches, and for which is substituted simply the low frequency motor generator set, results in a reduced first cost and a commendable mechanical simplicity.

Paper and Sheet Metal

A similarity in the general appearance of an Armco continuous rolling mill, as employed in the iron and steel industry, to the fourdrinier machine of the paper industry may be noticed from a study of the accompanying illustration. Naturally, details of construction in these two process machines of different industries vary widely, but each performs fundamentally the same function—that is the manufacture of a sheet of paper, or iron, or steel continuously. Although



Here the slab is reduced to 200 feet of sheet metal in about 20 seconds. So swift is this last operation that one must run to keep up with it

the fourdrinier machine has been used for the production of paper for many years, the continuous rolling mill of the iron and steel industry is a comparatively new arrival. The perfection of the Armco continuous sheet process has changed the outlook of the iron and steel industry. Millions of tons of sheet metal are now available for an ever-expanding multitude of uses.

Mr. John Tytus, of a family of papermakers and at present vice-president of the American Rolling Mill Company, Middletown, Ohio, first conceived the idea of continuous sheet rolling. After many years of experimenting, he and Armco's special engineers worked out the design, and the company constructed the first continuous rolling mill for the manufacture of sheets in 1922; but a great deal of faith, time, and money were required to crystallize the idea into a practical operating machine. It has been suggested that Mr. Tytus no doubt conceived his idea for such a machine from his long connection with paper mills.

C. H. Adamson to Manage Chicago District

Stephens-Adamson Mfg. Co., conveyor and screen manufacturer of Aurora, Illinois, has enlarged its Chicago office and moved to new quarters in the Civic Opera Building at 20 North Wacker Drive. C. H. Adamson, secretary of the firm, will be in direct charge of sales and engineering for the Chicago territory.

A confidence in the growing importance of Chicago as a manufacturing center is given as the reason for the increased sales and engineering staff.

C. H. Adamson, the new district manager, is well-known in the district, having been director of all Stephens-Adamson advertising and sales promotional work for many years. He is a graduate of Carnegie Institute of Technology and an Engineer of experience and unquestioned ability.

Tapered Roller
TIMKEN BEARING
EQUIPPED
Dodge-Timken-Bearing-Equipped line shaft hangers and pillow blocks prevent power waste, save lubricant and protect production
Are you still using plain bearing line shaft hangers and pillow blocks? If you are, you are taxing your profits unnecessarily, for friction is an insatiable consumer of power and lubricant.
Furthermore, you are endangering your production, because you never know when machinery may have to be shut down on account of bearing failure in power transmission equipment.
Timken-equipped line shaft hangers and pillow blocks not only conserve power and save lubricant by eliminating friction, but also hold shafts in alignment and prevent wear and whip.
Oil-tight bearing mountings prevent oil drip—another big advantage in textile mills, flour mills, food products factories and other places where oil contamination is a menace.
You need this modern power transmission equipment to safeguard your production and profits. The Timken Roller Bearing Co., Canton, Ohio.
TIMKEN
Tapered
ROLLER BEARINGS

The Month at Washington

SUBSTANTIAL increases in the allowance for earned income in computing federal taxes are recommended in a report submitted to the members of the Joint Committee on Internal Revenue Taxation by its investigating staff. The present method of computing the allowance in the case of taxpayer's wages and salaries is inadequate and complex, the report states, and offering three methods for consideration of the Congressional Committee, which revises the tax laws, to enable them to determine earned income allowance. Under this proposal the relief for taxpayers having incomes of $30,000 or more would be much greater for those having less than that sum under any of the three proposals.

Simplified Practice Programs Endorsed—Simplified practice programs established by industries through the Department of Commerce, do not violate any statutes enforced by the Federal Trade Commission, and standardization of products is not in violation of the rules, according to a recent announcement, but, on the contrary, the Commission regards standardization of commodities as beneficial to the public. The question was placed before the Trade Commission as a result of letters received from officials of several trade associations who had gained the impression that the Commission was about to rule adversely on the subject of simplified practice recommendations drawn up by members of an industry in co-operation with the Department of Commerce.

New Employment Service—The complete reorganization of the U. S. Employment Service has been announced by the Secretary of Labor. Under the plan, at least one employment bureau in each state will co-operate with state and local officials, and the co-ordinated service will care for interstate placements of men. Seven special divisions will handle as many trades, while the entire service will be in charge of the employment bureau of the department. A conference of all representatives was recently held to work out a plan of co-ordinating the Nation's employment work which will soon get under way.

Aerial Delivery of Fast Freight—Aerial delivery of fast freight is believed near, according to announcements of the Postmaster General, and as a starter a fast domestic aerial freight service will be developed in the near future and air mail routes will be extended across the Atlantic Ocean as well. The completion of two airways across the continent is also expected to prove stimulating to aviation in general and already there is a substantial growth of traffic on passenger lines. Commercial aviation is going to have the best year it ever enjoyed during 1931, is the prediction.

Fool Proof Planes—Planes "foolproof" in operation are sought to enlarge demand and the aircraft industry is striving to simplify controls in an effort to reach the less skilled operators, says the Aeronautics Branch of the Department of Commerce. Reduction of the landing speed for private planes, automatic devices to prevent stalling while in flight, reliable controls to keep aircraft on an even keel and less involved methods of operation are being given serious consideration by a large number of manufacturers, it is stated.

Interstate Commerce Rulings—Carload rates on printing paper from Kalamazoo, Mich., to Tulsa, Okla., were found unreasonable in a recent decision of the Interstate Commerce Commission (Butler Paper Corp., No. 23784), and reparation was awarded.

In International Paper Company vs. Alabama Great Southern R. R., No. 22488, the Commission found that rates on lignin liquor, in tank-car loads, and in barrels in carloads, and lignin pitch in bags, in carloads, from Corinth, N. Y., to destinations in the territory governed by the official classification, were unreasonable and unduly prejudicial. Reasonable rates were prescribed for the future.

In Consolidated Paper Company vs. Atchison, Topeka & Santa Fe Ry., No. 22145, the Commission finds that rates on paper boxes, corrugated, knocked down flat, in carloads, and on corrugated paperboard, in carloads, from Monroe, Mich. and Sandusky, Ohio, to Kansas City, Mo. and Omaha, Neb., were not unreasonable but minimum weight applied in connection with such rates was unreasonable for the future. Rates from Monroe were also found unduly prejudicial for the future, and a reasonable minimum weight and non-prejudicial rates were prescribed for the future.

The Commission has just handed down a ruling on I & S Docket No. 3356, concerning classification ratings on empty fiberboard cans or bottles in Southern territory, a copy of which may be had upon application to the Commission.

Bankruptcy Studies—The bankruptcy study in Chicago covers a wide field and embraces all business activities, according to the Department of Commerce, which reports satisfactory progress in the study on causes of business failures in that territory. More than 600 cases have already been studied and analyzed and hundreds more will be studied before the survey is completed, and a report can be compiled. The study so far shows that creditors prefer to carry their customers for long periods rather than take action when insolvency is apparent, and that an application to be adjudged a bankrupt is also being postponed by the man in business until the eleventh hour. It is pointed out that a considerable part of the annual loss from bankruptcies could be prevented if creditors were less lax in extending credit.

The Business Situation—The economic depression that affected almost the entire world during 1930 has been a dominant influence in the trend of the commercial policy of most foreign countries in the past year, says the Bureau of Foreign and Domestic Commerce, and the common distress has led many countries to study plans for closer economic co-operation. As a result they are taking steps to control imports or stimulate exports. Signs of upturn in world trade are, however, said to be visible, with easier money, regulated production and price stability among the outstanding factors. America is expected to lead the recovery, with lending to foreign interests and the placing of large orders abroad are being anticipated.

Roger W. Babson in a recent call at the White House told the President that the business upturn was here, with instances of improvement in nearly every branch of industrial activity apparent. He said that business conditions had just now passed the corner in the depression and definitely were on the upgrade.

The National Industrial Conference Board also shows the gradual return to normal in a report just issued, and predicts that conditions should materially improve steadily all this year. No immediate or rapid business revival is anticipated.

The Federal Reserve Board in reviewing the money and credit situation for 1930 reports that causes for delay in trade recovery last year were largely due to the drought here and depressed business conditions in Europe and the rest of the world. It is also pointed out that an active bond market and a new financing in volume have preceded business recovery in the past. Easy money early in 1930 had an immediate and encouraging effect upon the bond market and the market for new securities, but these other unfavorable developments retarded business recovery. A new test of the mechanism of the Federal Reserve System was met speedily and effectively and without any disturbance to general credit conditions when, during the closing days of 1930 and immediately after the opening of the new year, an exceptional demand for currency was in evidence.

The Labor Situation—That wage conditions are generally good, is the President's view, who is represented as being

If a valve lasts twice as long

is it not worth a fraction more?

THE PERFECT APPLICATION OF A PRINCIPLE

Seldom do you hear of a Nordstrom Valve wearing out. The reason is obvious.

The Nordstrom is lubricated.

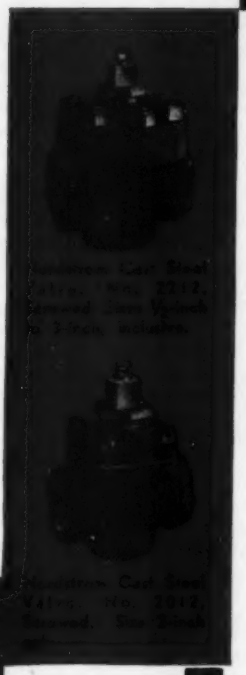
Practically all other valves are NOT.

You believe in keeping a good machine lubricated. How long would your lathes last without lubrication? Or your automobile?

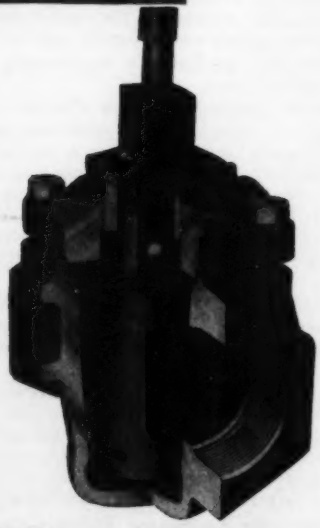
We've simply applied the basic idea of lubrication to valves—thereby enabling us to perfect utilization of the plug type to even the largest sizes. Furthermore, new refinements in the processing of cast steel enable us to manufacture high pressure valves for most requirements.

You realize the advantages of the plug type. Now with the application of the "Sealdport" principle, lubricant is uniformly distributed to every part of the plug and contacting surface of the body without creeping into the line. So there is always a film of lubricant, under hydraulic pressure, between plug and body. As long as there is lubrication, friction and abrasion cannot cause destruction. Hence, longer wear, longer life—and vastly cheaper valve cost. So your replacement costs with Nordstroms are but a fraction of what you have been paying in the past.

Many Nordstroms are giving five, ten and more times as much service as unlubricated types. Even double the life makes them the cheapest, in spite of the fact that the initial cost might be a fraction more. Ask for catalog. Also data on "Merco" Pipe Joint Compound.



OTHER TYPES AND SIZES FROM ½ TO 30-INCH



A new type of flanged joint for use with welded pipe lines requiring insertion of valves and fittings for the taking off of outlets. Extremely flexible. Size from 1½" to 10".

MERCO

NORDSTROM VALVES

MERCO NORDSTROM VALVE COMPANY

SUBSIDIARY OF THE MERRILL COMPANY . . . ENGINEERS

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Dallas - Magnolia Bldg.
Detroit - 2842 W. Grand Blvd.
El Paso - 111 So. Virginia St.
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Los Angeles - 1709 W. 8th St.
New Orleans - Masonic Bldg.
New York - 11 W. 42nd St.
Pittsburgh - Clark Bldg.
St. Louis - 317 N. Eleventh St.
San Francisco - 343 Sansome St.

Agencies:

Denver - Republic Supply Company, 332 Continental Oil Bldg.
Honolulu - W. A. Ramsay Co., Ltd., Fort & Queen Streets
Philadelphia - Brown, Wilson & Company, 1600 Arch St.
Saginaw - Arthur C. Beckert, 112 Durand St.
Salt Lake City - National Equipment Co., 101 West 2nd South St.
Tulsa - B. V. Emery & Company, 216 E. Brady Street

Factory - Oakland, Calif.

Canada - Peacock Bros., Ltd., Montreal, Toronto, Winnipeg, Vancouver. (Also Sydney, N. S.)
England - Audley Engineering Co., Ltd., Newport, Shropshire.
Buenos Aires, Argentine - General Electric, Soc. Anon., Victoria 618 Esq. Peru.

pleased with prevailing maintenance of existing wage scales and that the meetings of trade leaders early in the crisis resulted in the absence of drastic pay reductions, strikes and social disorders.

Unemployment is not permanent says the Secretary of Commerce in a recent statement, and he contends that American industry is capable of reducing the effect of trade depressions without governmental action. With industry cooperating to aid business during depression, collective action is an important factor. He finds that readjustment is now under way, with an increase in population and higher living standards factors which will enlarge demand.

The President's Emergency Committee for Employment reports the labor situation considerably improved in some areas, but with wide sectional differences in employment shown, with spotty but genuine gains in many sections.

Manufacturing Census—The Census Bureau has been issuing a number of reports by states covering the census of manufactures for 1929, and has now practically issued reports covering every state in the Union, including manufacturing and printing and publishing establishments, and others, showing number of establishments, wage earners, wages paid, cost of materials, value of products, horsepower, for each county in the state. Copies of any desired state may be had on request.

Tariff Commission—The Tariff Commission has decided to add to its staff in Europe in view of the number and importance of the investigations undertaken on foreign costs of production in the principal competing countries, including paper.

The Commission has just published a circular on its field work in connection with valuation analysis under section 340 of the Tariff Act of 1930, a copy of which may be had on request by interested parties.

Publications—The Standards Yearbook for 1931, a 398-page reference book of world-wide standardization progress is just off the press, compiled by the Bureau of Standards and copies may be had for $1 from the Bureau or the Government Printing Office. This is the fifth issue of this annual. It is a standardization reference book, summarizing and bringing up to date, under one cover, the reports of current standardization activity and accomplishments of hundreds of organizations in the United States and around the world.

A Handbook of Foreign Tariffs and Import Regulations has just been issued by the Bureau of Foreign and Domestic Commerce, Trade Promotion Series No. 114.

The Employment Situation—The Bureau of Labor Statistics reports an increase in pay-roll totals of .7 per cent on April over March, with increased employment shown in six out of 15 industrial groups, or .9 per cent. With 1926 as the average basis of 100, we find the following changes:

	Employment			Pay-roll Totals		
	1930	1931		1930	1931	
	April	March	April	April	March	April
Paper and printing	100.8	93.5	92.4	106.5	93.3	94.5
Paper and pulp	95.6	82.4	82.0	98.5	77.9	77.1
Paper boxes	90.6	81.7	81.9	96.3	80.6	83.0
Printing, book and job	102.6	94.8	93.0	107.2	94.0	94.4
Printing, newspapers	109.2	105.8	107.9	114.3	107.2	110.4

Wholesale Prices—The index number of wholesale prices computed by the Bureau of Labor Statistics shows a further recession in April, including a survey of 550 commodities, showing a decrease of a little over 1¼ per cent. With 1926 as the average basis of 100, we find the following changes for paper and pulp:

April 1930	March 1931	April 1931	Purchasing power of the dollar, April, 1931
87.0	83.1	82.3	1.215

Tariff Inquiry—An application for an investigation by the Tariff Commission on crepe and tissue paper hats and novelties has been filed with the Commission on the request of A. A. Faxon Co., 114 Market St., Philadelphia, Pa.

Could Grow Own Pulpwood—Instead of depending on foreign countries for future supplies of pulpwood, it would be advantageous for New England and New York to grow their own, says the Forest Service. More consideration should be given to the possibilities of forcing spruce lands of the Northeast to produce the pulpwood required by the region.

Pulpwood production and manufacture has been important in the Northeast from the beginning of the industry in North America, and favorable climate and transportation facilities have made the forests of this region a good source of wood supply. To keep the Northeast in the running in pulpwood productivity, young growth must be established on the land before the mature trees are cut off. The present practice of clear-cutting makes this imperative. Forest fires must be prevented. The need of some planting, slash burning, and cutting of weed trees is also indicated in certain areas. "Reproduction on Pulpwood Lands in the Northeast" is the title of Technical Bulletin 223-T just issued.

"Pine Tree Treasures," Miscellaneous Publication 106-MP, is another document just issued by the Department of Agriculture.

Tree Plantings in National Forests—More than 21,000 acres were planted to trees in the national forests in the calendar year 1930, says the Forest Service. The plantings have been greatest east of the Great Plains and near the centers of future wood consumption.

Condition in Newsprint Industry—The reduction of $5 per ton in Canadian newsprint effective May 1 probably will prompt marginal paper manufacturers in the United States to withdraw from the newsprint field, and concentrate on other lines, says the Chief of the Paper Division of the Department of Commerce. Only the large, exclusively newsprint producers, will be able to withstand the competition of the Canadian mills and show anything like a profit at the new price, which they must inevitably follow.

What is most likely to happen in view of the Canadian price reduction, the division believes, is that the larger units in this country will merge or get together to protect their own position and probably allocate their markets to a greater extent than formerly. The only other possibility is that of continuous chaos, which is most unlikely.

Newsprint paper at the new Canadian price, $57 per ton delivered is cheaper than it has been since prewar times, which was as low as $35 per ton, and as high as $125 in 1920. U. S. consumption amounts to 4,000,000 tons annually, about half of which is imported, mostly from Canada.

Paper Shopping Bags Classified for Tariff—Containers made of kraft paper and lithographically printed, given away free by department stores as shopping bags, were properly classified by appraising officers as envelopes, the U. S. Customs recently decided in overruling protests of the F. H. Shallus Company of Baltimore.

Judge Fischer decided these containers are so classifiable under paragraphs 1308 and 1309 of the Tariff Act of 1922. The importers sought to prove that these containers could not be used for mailing purposes and that duty should have been assessed at the rate on lithographically printed articles or on manufacturers of paper, or of which paper is the component material of chief value, not specially provided for.

Rosin Causes Yellowing of Paper—A strong corroboration of the theory that light-sensitive rosin is the cause of the so-called "yellowing" of better grades of papers has been obtained as a result of an investigation of the effect of light upon rosin and rosin sizes carried out at the National Bureau of Standards. Certain samples of rosin and compounds of rosin used in sizing paper were exposed in quarts tubes to the action of the rays of the carbon arc and darkened in color under this treatment.

Other recent tests made by the Bureau, and copies of which reports are obtainable upon application include Reproducibility of Bursting Strength Test Results, De-inking Tests of Stamped Envelopes, Accelerated Ageing Tests for Paper, Phormium Tenax for Paper Making, Standardization of Binders Board, etc.

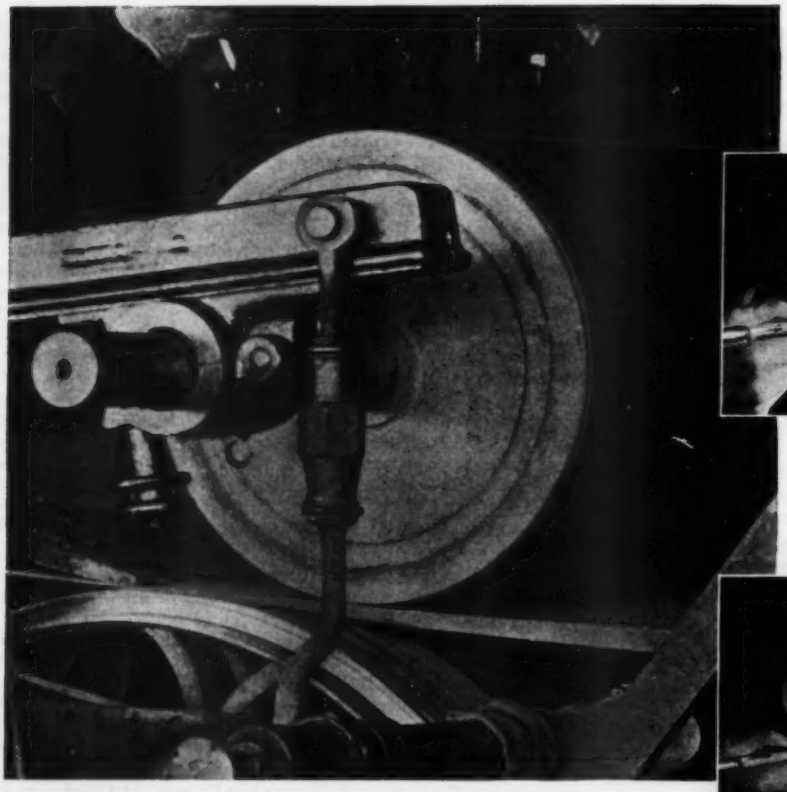
Foreign Paper Notes of Interest—The Scandinavian pulp and paper markets are continuing to mark time, and a number of Swedish sulphite mills have closed down for longer or shorter periods in order to reduce their output.

Australian printing and paper supply houses have been restricting credits for the past several months.

All New Zealand purchases of newsprint paper will be curtailed this year from 15 to 25 per cent.

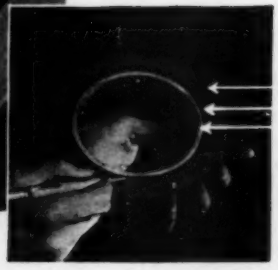
Advertising on toilet tissue rolls is now being extensively practised by firms turning out this product in the United Kingdom.

A *couch roll that's* soft rubber *right down to the core*



SOFT RUBBER
METAL CORE

THE NEW VULCALOCK ROLL. Note the soft rubber cover bonded directly to the metal core. This Goodrich construction assures a greater depth of uniform cushioning... a longer life, a lower cost per year.



SOFT RUBBER
HARD RUBBER
METAL CORE

THE OLD-TYPE ROLL. Note the "dead" hard rubber base between the soft cushion and the metal core. Eliminating this hard rubber foundation Vulcalock Couch Rolls provide more working cushion, for a given thickness than you get in any other type.

Cushions better... wears longer... ...costs less...

THE homemade roll... They had always credited it with low initial cost. Now, however, many progressive paper mills are keeping careful records of *total* costs. They are finding that there is great economy in changing to rubber-covered rolls. Equally important, they are finding that there is a wide difference even in rubber-covered rolls.

With the exception of those made by the Goodrich Vulcalock process, they have a layer of hard rubber, three-sixteenths to a quarter of an inch in thickness, *between* the soft rubber and the steel core. Now, however, the Vulcalock process makes it possible to attach *soft* rubber *directly* to the metal with an adhesion that is practically as strong as the rubber itself. This eliminates the "dead" hard rubber base. It provides a roll that is "live" cushioning through and through. Naturally it gives you more for your money, for there's more cushion for a given thickness. Naturally it means lower yearly costs for rolls.

For the full story of Goodrich Vulcalock rolls, in pamphlet form, write to The B. F. Goodrich Rubber Company, (Est. 1870), Akron, Ohio.

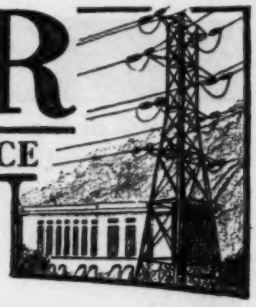
VULCALOCK *Paper-Mill* ROLLS

Another B. F. Goodrich *Product*

COUCH ROLLS · PRESS ROLLS · TABLE ROLLS · WIRE-CARRYING ROLLS · FELT-CARRYING ROLLS, BOTH PLAIN and WORMED · WRINGER and SQUEEZE ROLLS

POWER

GENERATION - UTILIZATION - MAINTENANCE



By W. S. JOULE

This section turns the searchlight upon power and its allied problems. It shows up big possibilities to save. Opportunities to improve conditions, methods, apparatus will be discovered. Worth while practices suggest new ideas and wider usages of equipment.

Check Transformer Oil Levels Now

BEFORE the approach of hot weather, it is particularly desirable to inspect all transformers, both indoor and outdoor types, and especially those depending upon oil for cooling without water cooling coils. Where syphoning takes place, leads and cases frequently become covered with dust, oil and other matter which tends to cut down the radiation, so that operating temperatures increase proportionally. Moreover, the syphoning results in a gradual lowering of the oil levels, so tending to increase operating temperatures still further.

It is not enough for satisfactory parallel operation, that two transformers have the same ratio between primary and secondary and the same terminal voltage. The phase relationship must be correct, the impedances as well as the reactance and resistance components must be identical. These tests should be made at the time the various transformer banks are connected in parallel. It must be borne in mind, however, that if the oil level of one or two transformers in a bank is low, the heating will be increased, the resistance will increase also so as to change the impedance of the unit, causing an unbalance of the phases and a phase displacement. In many cases of transformer trouble, it has been found only after extensive tests that the trouble was due solely to a low oil level in one of the transformers. This explains why it is a good practice to examine all transformers at this time of year, cleaning the cases, filtering and replacing the oil when necessary, checking up oil levels, wiping terminal boards and examining the leads, and taking temperature measurements. Where this is done, some of the troubles so frequently encountered will be eliminated, while the dangers from lightning will be reduced.

Connecting Polyphase Wattmeters Correctly

IN connecting up alternating-current circuits and equipment, a mistake will usually blow a fuse, open a circuit-breaker, cause a shut-down or similar trouble. There is one case, however, where every wireman and repairman never feels exactly at ease, always feeling that perhaps he has made a mistake. That is in connecting up a polyphase wattmeter. If connected up wrongly, but the power factor is low, the meter will rotate in the right direction but register the wrong amount. If the wattmeter is connected up correctly, it will rotate in the correct direction regardless of the power factor. In the majority of cases it is out of the question to determine the power factor, hence the uncertainty as to whether the instrument has been properly connected up.

In many instances, a wattmeter may remain in service for months or even years, although improperly connected, and then the discovery may be made only by accident. Ordinarily the man connecting the wattmeter is to blame because his technique is wrong. Usually he will connect up first one element and then the other so that each element rotates in the same direction. After connecting up one element, he marks his leads and disconnects them, connecting up the other element so that it will rotate in the same direction, then connecting up the first pair of leads. This may be correct or it may be incorrect, depending upon the power factor at the time direction of rotation of each element was determined.

If it is eventually discovered that the meter is not reading properly, an investigation will show that the meter reads too slow on heavy loads and high on light loads. When the connections to the wattmeter are checked up, the trouble will be found immediately. The explanation is simple. With a light load on, such as the induction motors (a load consisting of a line shaft, or perhaps a few motors without any load at all), the power-factor will be below 50 per cent. When the load is increased, the power-factor improved, with the result that one element of the meter will exert a negative torque, so that this element, alone, will run backward instead of forward. Were each element of the wattmeter tested alone at light load and on low power-factor, the one element should revolve forward and the other backward. The sum-total rotation would be the result of the two torques, the ultimate running speed being the difference and not the sum of the individual speeds. At heavy loads, however, each element or the disc of the meter should revolve in a forward direction and the total rotation be their summation. The resultant rotation will be the difference of these two torques in the one case (at power-factors below 50 per cent) and will be in the positive direction.

A wattmeter may be connected correctly, regardless of power-factor by following this simple rule: When the power-factor is less than 50 per cent, the wattmeter element giving the least number of revolutions of the disc, in a given time, should be connected so that it rotates in the reverse direction. The other element should be connected so that it has a positive direction of rotations. When the power-factor improves and is above 50 per cent, the sum of the torques will have a resultant in the forward direction, and the register of the meter will be the sum-total of the torques exerted by the two elements.

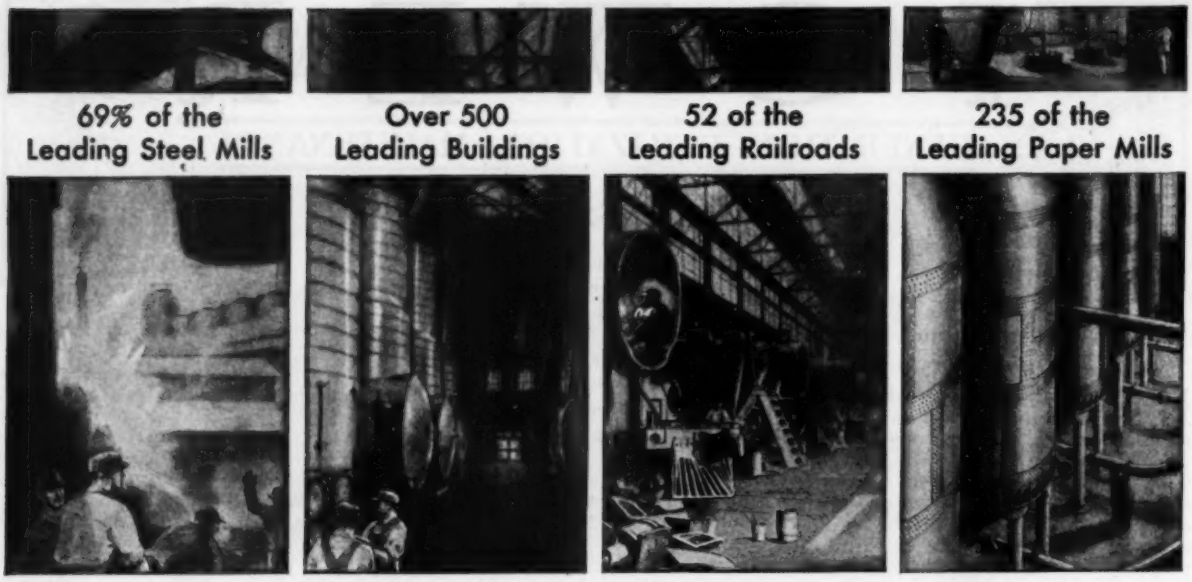
A polyphase should never be connected up without first checking up the connections, and making some effort to roughly determine from a study of the load the approximate power-factor. Were this done, many of the troubles resulting from low power-factor, or faulty connections, would be avoided.

Suggestions for Drilling Marble

MUCH money can be saved on construction work where old switchboard panels are converted for future use. This can not be done, however, where the appearance is paramount.

Where considerable drilling has to be done, it will be well to give close attention to the shape and condition of the drills. Up to about 1½-inch diameter ordinary twist drills are satisfactory. The lip should be given plenty of clearance, however, and the drill should be kept well watered while cutting. It will not jam if kept clean. Up to a ¾-inch diameter hole and smaller, 400 revolutions per minute seems to be about the best speed, while 200 r.p.m. above ¾-inch will usually give good results.

The drill should be set by hand and care should be taken that the material does not break off in large pieces. For holes above 1½-inch diameter, wing cutters will be found to give better results than twist drills for drilling both marble and slate.



THIS SHOULD MEAN SOMETHING TO YOU!

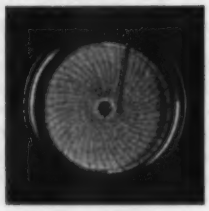
THE Republic Flow Meters Company offers nation-wide evidence of the preference shown by industrial leaders for Republic Flow Meters. Whether it be in the steel industry, paper industry, chemical industry or other major industries, you will find a dominating number of Republic Flow Meters measuring the distribution of steam, water, gas and air.

When so large a number of America's industrial leaders specify Republic instruments year after year, it is striking evidence of their satisfactory performance and industrial value.

What does this leadership mean to you? Briefly, this—when you decide—as you eventually will—to take full advantage of the assistance modern instruments can render, a statement of your aims to Republic will make available an unmatched experience, a complete range of instruments and alternative schemes to choose from.

One of our engineers will be glad to call at your request, without obligation on your part.

REPUBLIC INSTRUMENTS



Descriptive literature mailed upon request

REPUBLIC FLOW METERS COMPANY
Executive Offices and Plant: 2210 Diversey Parkway, Chicago, Illinois
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REPUBLIC·FLOW·METERS
TURN THE WASTE OF TODAY INTO THE PROFITS OF TOMORROW

MICHIGAN

Program of Interstate Meeting of Cost and Technical Associations

Kalamazoo, Michigan, May 22 and 23, 1931

FRIDAY, MAY 22nd

9:00-12:00 M. **Registration** . . . . . No Fee

12:30 P. M. **Luncheon and Joint Session**
. . . . . Glen Ingling, Presiding
Welcome . . by Mayor S. Rudolph Light
Stabilization of Industrial Employment
L. C. Reynolds, Comptroller, American Writing Paper Co.

2:30 P. M. **Sectional Meetings**

COST SECTION	TECHNICAL SECTION
Frank Brown, Chairman	E. G. Milham, Chairman
Subject to be Announced—Seth L. Bush, Port Huron Sulphite & Paper Co.	"Application of the Mathematics of Drying"—D. W. McCready, Prof. Paper Chemistry, University of Michigan
"Coating Mill Cost Estimates"—Geo. K. Ferguson, Watervleit Paper Co.	"Significance of Chemical Tests in Mill Control"—Dr. Jessie Minor, Rag Content Paper Laboratory
Conference on Proposed Uniform Cost System	"Manufacture of Starch Products and Their Use in Paper"—Paul Torre, A. E. Staley Mfg. Co.

6:30 P. M. **Informal Dinner**
. . . . . Frank Libby, Presiding
Music and entertainment by internationally known entertainers.

SATURDAY, MAY 23rd

COST SECTION	TECHNICAL SECTION
H. C. Bradford, Chairman	H. R. Miller, Chairman
"The Board Converters Problems"—H. C. Harvey, Sutherland Paper Co.	"Observations of Chemical and Physical Aspects of Hydration"—Dr. Otto Kress, Institute of Paper Chemistry
Subject to be Announced—T. J. Burke, Cost Department, A. P. & P. I.	
Question Box	Question Box

8:00-11:30 A. M. **Mill Visits, Golf or Bowling**

12:30 P. M. **Luncheon and Joint Meeting**
. . . . . M. D. Bardeen, Presiding
Story of Nitro-cellulose, in Word and Picture
. . J. K. Speicher, Hercules Powder Co.
Nomographic Charts . . . . . .
. . . . D. S. Davis, Mead Corporation

3:00 P. M. **Sectional Meetings**

Allied Paper Mills Has New Executive

Dwight R. Curtenius has been added to the executive staff of the Allied Paper Mills as Controller. Mr. Curtenius has not formerly been in the paper business himself but comes of a papermaking family. His work in the past has been in the metal trades, having been general manager of the Kalamazoo Stove Company and later owner and manager of the D R C Foundry, where he became closely associated with the paper mills by supplying them with castings for various machine parts.

Mr. Curtenius' duties with the Allied will be of a general supervisory nature and will include both the financial and production fields.

The Purchasing Agents Association of Kalamazoo, consisting mainly of paper mill buyers, was host to the Fourth District Convention of the National Association of Purchasing Agents, in Kalamazoo, Mich., April 17 and 18. A number of very interesting papers were presented at the meetings Saturday which were of general interest to all Purchasing agents. Probably the most interesting, was the one on Psychology of Purchasing, which was presented by Professor T. S. Henry of Western State Teachers College, Kalamazoo.

Paper Mill Men Meet in Kalamazoo

On April 22 about 150 paper mill men including, superintendents, engineers, chemists, and cost men assembled for a sumptuous dinner at the Columbia hotel and then listened to a very instructive talk on the Minton Vacuum Dryer, by Ogden Minton, inventor of the equipment and recipient of the Tappi medal for outstanding work in the interest of papermaking.

Mr. Minton opened his talk with a number of slides which gave the listeners a general idea of the appearance of a number of installations now in operation.

Plenty of time was spent in going into the details of the operation and among the points brought out were that the dryer does not have to be operated at full vacuum but can be dropped down to as low as 17 inches, but in such a case the temperature of the dryers must be raised accordingly.

Extensive experiments have been made to find the point of best sizing with rosin size. It was found that a temperature of 170 deg. Fahr. to 190 was necessary which makes the rosin size non-effective when using the Minton dryer. For that reason, the company is working out a new sizing material to substitute for rosin. It is of interest to note here that the Paper Makers Chemical Corporation claims to have a size already developed which will work at the low temperatures of the Minton dryer.

The thermal efficiency of the Vacuum dryer is claimed to be 97 per cent and Mr. Minton exhibited charts to prove his point.

Charles G. McClellan, a veteran of the paper industry and for the past ten years superintendent of the Kalamazoo Vegetable Parchment Co., died April 15 at his home in Parchment Village. He was well liked by his associates and will be missed greatly by all who were privileged to know him. He leaves a widow and one son.

In spite of the poor business, the Sutherland Paper Co. was able to pay its regular quarterly dividend on May 1. This company celebrated its 14th anniversary last month and has grown from a $10,000 concern known as the Kalamazoo Carton Co. to a $3,000,000 corporation operating two paper mills and two carton plants, all in Kalamazoo.

Six hundred and eighty-four employees of the River Raisin Paper Company, of Monroe, Mich., have been insured with life insurance protection through a policy issued by the Prudential Insurance Company of America, for a total of $1,083,000.

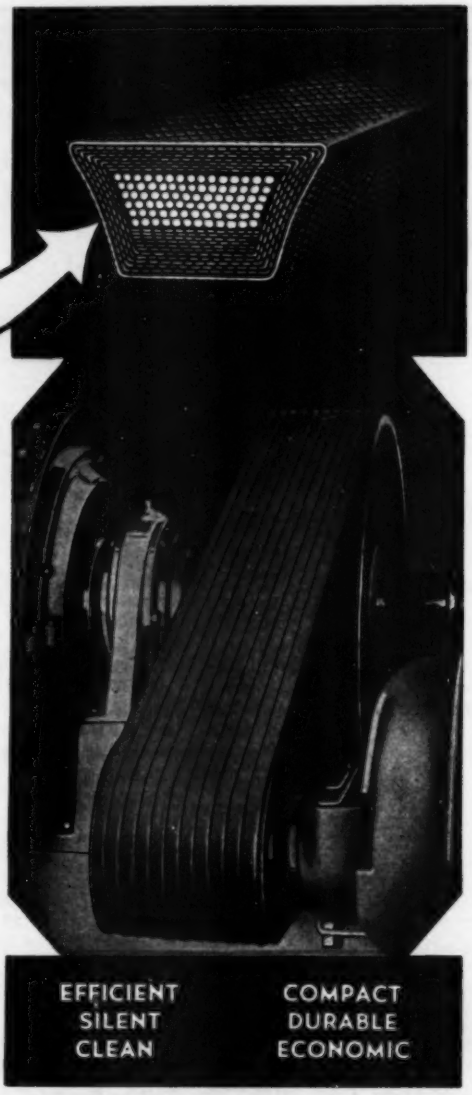
At the annual meeting of Cutler-Hammer, Inc., Milwaukee, Wisconsin, held April 14, Frank R. Bacon, former chairman of the board, was elected president to fill the vacancy caused by the death of Beverly L. Worden. The office of chairman of the board was abolished. At the same meeting, other officers were elected as follows: vice-presidents: F. L. Pierce, J. C. Wilson; treasurer, H. F. Vogt; secretary, W. C. Stevens.

The Erie City Iron Works, Erie, Pa., has issued announcement of new sales appointments as follows: Thomas O. Schrader, Jr. has been appointed district sales agent with office at 716 Investment Bldg., Pittsburgh; A. H. Kennedy has been made district sales agent with offices at 316 Glencoe Bldg., Duluth, Minn., and the San Francisco territory has been extended with the appointment of C. W. Kennecott as sub-agent with office at 800 Santa Fe St., Los Angeles, Calif.

That *simple*

Concave Side

is the Secret of Efficient V-Belt Drives



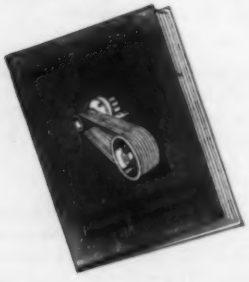
Prove this, yourself. Take a V-Belt that has the ordinary straight sides. Bend it as it bends in going around a pulley. You will see the top of the belt grow narrower, the bottom wider, while the sides of the belt bulge out! (*fig. 1*)

Fig. 1

That shape does not fit the sheave groove. Two results are clear: (1) Where the belt bulges, excessive wear--shorter life! (2) The bulging side does not uniformly grip the pulley--loss of drive efficiency!

Now bend the belt with the concave side (patent pending) -- the Gates Vulco Rope. You will see the concave side become straight, (*fig. 2*). This belt exactly fits the sheave groove. Two advantages: (1) Wear is evenly distributed over the whole side of the belt --longer life! (2) Entire side of the belt uniformly grips the pulley --full delivery of power!

Fig. 2



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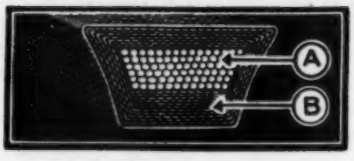

Patented Construction: United States Patents 1,354,738 and 1,400,539 protect both the principal and the construction of a V-Belt having a center of endless cords (for strength) with a bias-cut cover (for flexibility and long wear).

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MULTIPLE V-BELT DRIVES

Manufactured by Gates Rubber Co., Denver, Colo.

The World's Largest Manufacturer of V-Belts

WISCONSIN

Devastation Wrought by Forest Fires

Forest fires during the last month in the state have been among the most severe in its history, with the result that more drastic measures will be demanded than ever before to preserve the remaining supplies of timber and pulpwood. Twenty-four northern Wisconsin counties, with the co-operation of paper and lumber companies, have made a survey of the recent devastation and were planning to send hundreds of representatives to the state capitol at Madison to demand an annual fund of $1,000,000 as requested by the Wisconsin Conservation Commission.

Fires have had to go unchecked in many cases because of lack of men and equipment to extinguish them. The Nekoosa-Edwards Paper Company's extensive tree nurseries and private forests were threatened by one of the fires but were finally saved. Back firing had to be resorted to in many cases to check progress of flames, with resultant increase in losses.

Conditions have been caused by the extensive drouth of the last year or more, the lack of winter snows and light rainfall this spring. High winds spread small fires rapidly to valuable timber areas in northern Wisconsin and Upper Michigan. Three men serving in fire protection service lost their lives. The upshot of the whole situation is extreme pressure on the legislature to enact laws needed long ago to give adequate protection against this greatest source of timber losses. At least $415,000 out of the appropriations will be used annually for fire fighting. Tax delinquent lands will be acquired by the state and planted to trees. A plan also is in the making to use prison labor for this work. The system used by the Nekoosa-Edwards Paper Co., Nekoosa, has been studied because of its success at low cost and probably will be imitated by the State.

Paper Mills Help to Stabilize Industry

Paper mills have contributed materially to the industrial stability of Wisconsin during the past months of depression due to their steady operation. Recent estimates of the situation indicate that more than half of the mills are running on full schedules, and others four to five days a week. Specialty mills as a rule are nearest to normal in production and maintenance of wage scales. There has been some uncertainty in the kraft mills, due to the overstocking of the market and efforts of manufacturers to get together on some plan to prevent overproduction.

Efforts will be made by the mills to use more men as a means of unemployment relief until conditions improve. Twenty-one manufacturers met recently with Gov. Philip LaFollette at the executive mansion at Madison, to talk over the situation with him. The governor has been calling together the heads of each line of industry and has urged them to find ways of using more men if possible. As the conferences are not open to the public or the press, no exact plans were announced.

Financial statements of several mills indicate decreased earnings but with continued liberal surpluses to fall back on if necessary. Economies are being effected wherever possible and while some reductions in salaries of executives and office employees are reported, mills have attempted to keep wages at their usual level. Engineering and construction staffs also have been reduced because of curtailment of expansion of mills until conditions are more certain.

Dividends of 1½ per cent were declared by the Badger Paper Mills, Inc., of Peshtigo, on 14,300 shares of $50 par preferred stock for the first quarter of 1931, according to announcement of E. A. Meyer, president and general manager. This is on a six per cent basis or equal to $3 a share annually. This is the first dividend to be paid by the company since its beginning in 1929, when the defunct mill of the Peshtigo Paper Co. was taken over. The company showed a net profit of $88,189 for the year 1930 and has an earned surplus of $121,379. Shares were originally sold on an agreement that they would be non-cumulative until Feb. 1, 1931.

Net earnings of $484,147.93, equal to 96 cents a share on 499,800 shares of common stock were reported by the Kimberly-Clark Corp., Neenah, for the first quarter of 1931. This was a decline of approximately $200,000 from the same period a year ago when the net was 694,000, or $1.39 a share.

Important items of the company's statement were: Net sales for quarter $4,871,892.64; cost of sales $3,751,993.55; gross profit $1,119,899.09; general expense, including bond interest $557,977.26; net profit from operations $561,921.83; other income $157,655.21, making total $719,577.04; federal tax allowance $85,429.11; preferred stock dividends $150,000; final net $484,147.93.

At the company's annual meeting last month W. H. Ryan and C. A. Sommers were added to the board of directors, and Mr. Sommers was elected treasurer. F. J. Sensenbrenner continues as president, and the remaining officers and directors are unchanged.

Sales and earnings declines were shown by the Hoberg Paper & Fibre Co., Green Bay, during 1930, although the company continues to maintain a strong position. Sales dropped from $3,106,000 in 1929 to $2,996,000 in 1930, and net earnings from $375,934 to $315,393. Costs remained about the same, with $2,756,000 in 1929 and $2,704,000 in 1930.

Satisfactory progress is being made by the Tomahawk Power and Pulp Co., Tomahawk, newly organized to take over the King pulp mill of the Tomahawk Pulp and Paper Co. There are plenty of orders ahead, according to Mayor Frank Theiler, manager. Two grinders are being operated from the water power, which is limited in supply. Considerable peeled spruce is being purchased direct from farmers in order to help them in their financial plight.

Preliminary work is under way for construction of a new government dam on the Fox river at Kaukauna. Boats of the U. S. engineering department have been hauling in large quantities of materials since navigation opened this spring and excavating and construction of coffer dams is in progress. The dam will be 600 feet in length, with six sluiceways and steel gates. Concrete construction will be used to replace the worn out wooden dam. The total cost will be about $130,000.

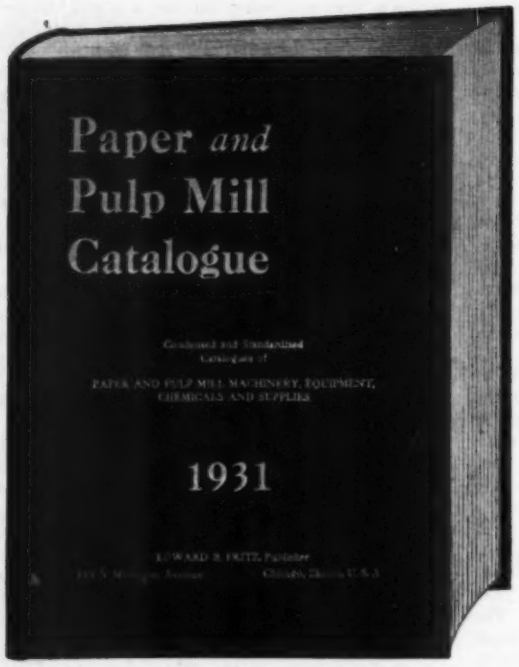
Although the Falls Manufacturing Company's mill at Oconto Falls, may resume operations in the near future, the company is removing all its pine logs to Muskegon, Mich., for use in another branch mill of the International Power & Paper Co. This is being done to prevent them from rotting. Part of the idle crew at the Falls mill is thus given work. A maintenance crew is keeping the mill in shape to resume on call, according to Frank Cota, mill manager, but the International company has not indicated when this might be.

Consolidated Mills Keep Up Safety Work

Wage contracts have been signed with the labor unions by the Consolidated Water Power & Paper Co., Wisconsin Rapids, in accordance with the annual custom, covering another year's operations. No changes were made in the scales and the only variations were on technical changes.

The Consolidated company's four mills are keeping up their outstanding safety work, finishing the month of March without a lost time accident in any of the plants. The record of more than a year at the Interlake mill at Appleton, has been bettered by another month and these employees now have a "no accident" record dating from Feb. 16, 1930. The Stevens Point mill is second with no accident since Aug. 3, 1930. The Biron mill is perfect as of Jan. 10, 1931, and the main mill at Wisconsin Rapids as of Feb. 23, 1931.

The new Forest Products Laboratory of the U. S. Forest Service, to be built at Madison, will occupy the site of several Indian ceremonial and burial mounds estimated to be 500 to 1,000 years old. They were probably built by early Algon-



GET THE FACTS

There is an old saying among engineers that every engineer should have his own note book. It is from such a note book that unusual facts pertaining to the engineer's specific job may be obtained.

The Paper and Pulp Mill Catalogue is not published to take the place of the engineer's individual note book but rather to enhance it and to serve others as well. Every Engineer, Production Executive, and Purchasing Executive in the pulp and paper mills of the United States and Canada can "Get The Facts" for many of their perplexing problems by referring to this book. A copy of the 1931 edition will soon be available to you.

This catalogue is published annually and is distributed gratis to key executives in the pulp and paper mills of the United States and Canada. Are you as a key executive in your mill receiving a copy? If not, inform us so that your name may be placed on the selected list for the 1931 edition now in preparation.

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PAPER AND PULP MILL CATALOGUE

333 N. Michigan Avenue Chicago, Illinois

quins, according to local authorities. Excavation of the last unexplored mound of the group has just been completed by C. E. Brown, Director of the Wisconsin Historical Museum, assisted by students of the university department of anthropology.

Prof. Lewis Made Dean of Students

Harry F. Lewis, professor of organic chemistry at the Institute of Paper Chemistry, graduate school affiliated with Lawrence College, Appleton, has been appointed dean of students. Under this appointment professor Lewis will have charge of the admission of students, the organization of academic problems, and the supervision of their academic work.

Dr. Lewis before coming to the faculty of the Institute of Paper Chemistry last June was head of the department of chemistry at Ohio Wesleyan University, Delaware, Ohio. At one time he was research chemist for the National Analine Chemical Co., Buffalo, New York. Dr. Lewis graduated from Wesleyan University, received his doctor's degree from the University of Illinois. He has held positions on the faculties of Grinnel College, Cornell College, and the University of Maine.

During the war he was called to Washington, D. C., to serve in the color investigation laboratory in the bureau of chemistry. Dr. Lewis is a Fellow of the Iowa Academy of Science, a member of the American Chemical Society of Sigma Xi, and Phi Lambda Upsilon. He is the author of a textbook on "Fundamentals of Organic Chemistry."

Quantities of sludge accumulated by the Nekoosa-Edwards Paper Co., Nekoosa, is being given farmers of the vicinity free for the hauling. The company has done this every year after finding that its calcium content of 92 per cent makes it as valuable as limestone for fertilizing.

Charles Jacobson has retired as foreman of the Outagamie Paper Company's pulp mill at Kaukauna, after serving in that capacity for the last 49 years. He assisted in construction of the mill in 1882. Mr. Jacobson will devote his time to a large dairy farm he has owned for many years and is contemplating a trip to his old home in Sweden.

Peter Rasmussen, an employee of the Lakeview mill of the Kimberly-Clark Corporation, Neenah, had his arm badly crushed in a recent accident, when it was drawn into the rollers of a paper machine. He is expected to recover the full use of his arm, as no bones were broken.

Miss Helen Everest, eldest daughter of D. Clark Everest, vice-president and general manager of the Marathon Paper Mills Co., Rothschild, was married last month to Charles Gordon Gilly, of Big Stone Gap, Va. The couple is on an extensive honeymoon trip and plans to reside at Laurel, Miss.

Iron Cribbing for Retaining Walls

The American Rolling Mill Company of Middletown, Ohio, has just announced another new and interesting use for sheet-metal. This is the recently developed Armco Ingot Iron Cribbing for retaining walls. Thus metal has invaded another field, where wood and concrete are the traditional materials.

The new metal cribbing is of a simple yet effective design. The wall is built up from standard formed galvanized sections, either six or eight feet in length, and held together by a sturdy interlocking device. Exhaustive experimental tests have been made for compression, shearing and bending of the units, both separately and when locked together.

From the engineering standpoint there are numerous advantages. First and foremost, is economy of installation, as well as greater speed. The wall is in service as soon as installed, without waiting an interval for curing. The units are but one-fourth the weight of other known designs. This reduces transportation costs, and reduces the factor of expense in handling. It also eliminates the necessity for special handling equipment. The wall may be erected by unskilled labor.

The sturdy metal units may be dropped without fear of breaking or chipping. Being non-porous, they do not assimilate water and do not spall under freezing and thawing conditions as do some installations. Neither does settlement of the foundation soil crack the cribbing wall, when properly erected. Because the units are light in weight, they can be placed on foundation soils which would require a pile or caisson sub-foundation if a heavy mass wall were constructed.

Another utilitarian quality of the new design is the flexibility. The metal cribbing can be dismantled and relocated without the loss of a single unit. The height of the wall can also be increased if it is necessary to raise the grade. The face of the wall need not be a straight line for it can be curved if desired.

❖ OHIO ❖

Reports Show No Increase in Employment

The Bureau of Business Research of Ohio State University in a bulletin covering employment in the paper and printing industries in Ohio shows that employment in March continued the decline which has been in progress since December, 1930. The decline in March over February was one per cent which is contrasted with a five-year average increase of one per cent in the February-to-March period. The March employment was seven per cent less than March, 1930.

Average employment in the industry for the first three months of 1931 was five per cent less than during the corresponding period in 1930.

In the paper industry separately, March employment declined one per cent from February and nine per cent from March, 1930. The March decline is in marked contrast to the five-year average gain of one per cent for the February-to-March period. Of the 11 firms reporting, eight shared in the decline in March employment over February, two reported increases and one showed no change. Average employment for the first three months of the year was five per cent less than for the first quarter of 1930.

Superintendents of Miami Division Meet

The regular monthly meeting of the Miami Valley Division of The American Pulp and Paper Mill Superintendents Association was held at the Peerless Pantry, Miamisburg, Ohio, Saturday, April 18, preceded by a dinner. There were 46 members in attendance.

Tom Harvey, general chairman of the national convention to be held in Dayton, June 4, 5, and 6, spoke of the plans for the meeting. Carl Magnus, national president of the association was also present and gave a very inspiring address. He also spoke of the national meeting and urged all members to attend.

E. G. Milham, of the Bryant Paper Co., Kalamazoo, Mich., spoke on Beater Room Control as an Aid to the Superintendent. Mr. Milham's address was well presented and very instructive.

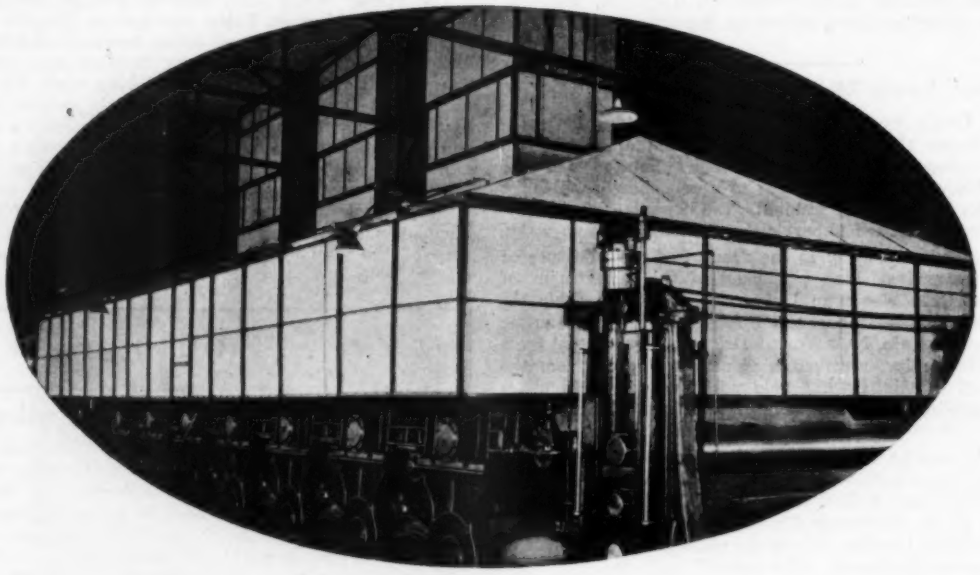
The next meeting will be held May 16, at the Hamilton Inn, Franklin, Ohio.

Grindle Acquires Bethlehem Pulverizer

The Grindle Fuel Equipment Co., a subsidiary of the Whiting Corporation, Harvey, Ill., has purchased the exclusive manufacturing and selling rights to the Bethlehem pulverizer formerly manufactured by the Bethlehem Steel Company.

The Whiting Corporation manufactures pulverizing equipment, power house and industrial cranes of all types, foundry equipment, railroad shop specialties, chemical equipment and automatic stokers.

Other subsidiaries of Whiting Corporation are: Swenson Evaporator Company and Joseph Harrington Company.



Before You Decide On Any Hood —Send For This Bulletin!

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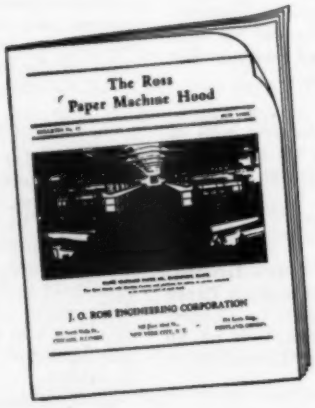

This bulletin fully describing and illustrating the Ross Paper Machine Hood gives all details concerning its superior construction, time and labor saving advantages. If you are not already familiar with the features of this advanced type of hood, write for a copy of this bulletin. Make no decision on any hood until you have read it. No obligation—of course.

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Canadian News

Five-Dollar Reduction in Newsprint

The chief development in the newsprint situation last month was the announcement by leading Canadian mills that the price of newsprint had been cut $3 per ton, retroactive from the beginning of the year to May 1, and $5 per ton thereafter. The recognized price heretofore existing was $55 per ton mill price, or $62 delivered in New York, and similar prices for other zones. The companies confirming the reduction are the so-called Institute group, namely, Canada Power and Paper, Abitibi, St. Lawrence Corp., and Price Bros.

In confirming this action, Ernest Rossiter, president of St. Lawrence Corp., stated that the cut had been more or less dictated by the general situation created in the United States market, where since the first of the year cuts in price had been recorded by companies outside the Canadian group, and also what he termed the indefinite offer of tonnage of the Backus organization. J. H. Gundy, president of Canada Power and Paper Corp., also indicated that the action was merely a recognition of a situation already in existence, that is in the matter of price-cutting by companies outside the group above mentioned.

That this action was taken without the co-operation of International Paper is clearly indicated by a telegram sent to the company's customers over the signature of vice-president J. L. Fearing, as follows: "Supplementing our letter dated March 17, we have just received information indicating that leading Canadian mills are reducing the price of newsprint to their customers. As soon as we have all the facts and have worked out the details you will hear from us again." The letter of March 17 referred to in the telegram asked the company's customers to keep it advised of any information they might have of price cuts by other manufacturers.

In the present situation is a curious parallel with that which developed in the industry at the close of 1929. At that time the Canadian group announced an increase of $5 per ton, which increase was shortly after withdrawn, while International Paper at that time took the stand that the time was not propitious for an increase and announced that their then existing price would be continued.

The situation is generally regarded as having been precipitated by the fact that the Minnesota and Ontario Paper Co., one of the Backus-Brooks group, has gone into receivership and shortly after lowered its prices in order to get business. But a general return to free competition has long been anticipated, and further developments are anticipated as a preliminary to a drastic reorganization of the whole industry.

It is interesting to note the reaction of the more important American newspapers, who are the largest customers of the Canadian newsprint mills, to the cut in price. At the meeting of the American Newspaper Publishers Association held in New York last month, W. G. Chandler, of the Scripps-Howard newspapers, presented the report of the newsprint committee, which predicted failure of several newsprint companies and an increase in prices as probable results of the price war in the industry.

Slight Improvement in Newsprint Output

During the month of March, Canadian newsprint mills operated at 58.1 per cent of rated capacity, which compared with the new low ratio of 55.4 per cent set in February, and was the first improvement to be noted in the industry in many months. Production of newsprint in Canada during that month amounted to 187,005 tons, as compared with an output of 164,552 tons in February. A satisfactory feature of the situation is the fact that shipments from the mills during March exceeded output by 725 tons, so that stocks on hand were actually reduced, that is, the increased output was due entirely to an increased demand for the product of the Canadian mills.

The total output, however, still continues to run considerably below that of the corresponding period of last year, and for the first three months of 1931 there has been a decrease of 70,279 tons, or 12 per cent, as against the first quarter of 1930. The United States mills have not fared as well, however, as the Canadian mills, as their output for the first three months of this year was 59,216 tons, or 17 per cent, less than for the first three months of 1930. Production from Newfoundland still keeps ahead of last year, being up 4,362 tons, or five per cent, compared with the first quarter of 1930. The whole continent, including Mexico, showed a decline for the first three months of this year of 126,131 tons, or 12 per cent, compared with the first quarter of last year.

While Canadian mills were operating 58.1 per cent of rated capacity, United States mills showed 68.4 per cent, Newfoundland, 93.4 per cent and Mexican mills 78.8 per cent, giving a continental average of 63.0 per cent.

Canadian exports of newsprint for March showed a very substantial gain over February, although still well below the level for March, 1930. The total value of newsprint exported for the month was $11,200,325, as compared with $8,086,266 in February, and $12,918,086 in March of last year.

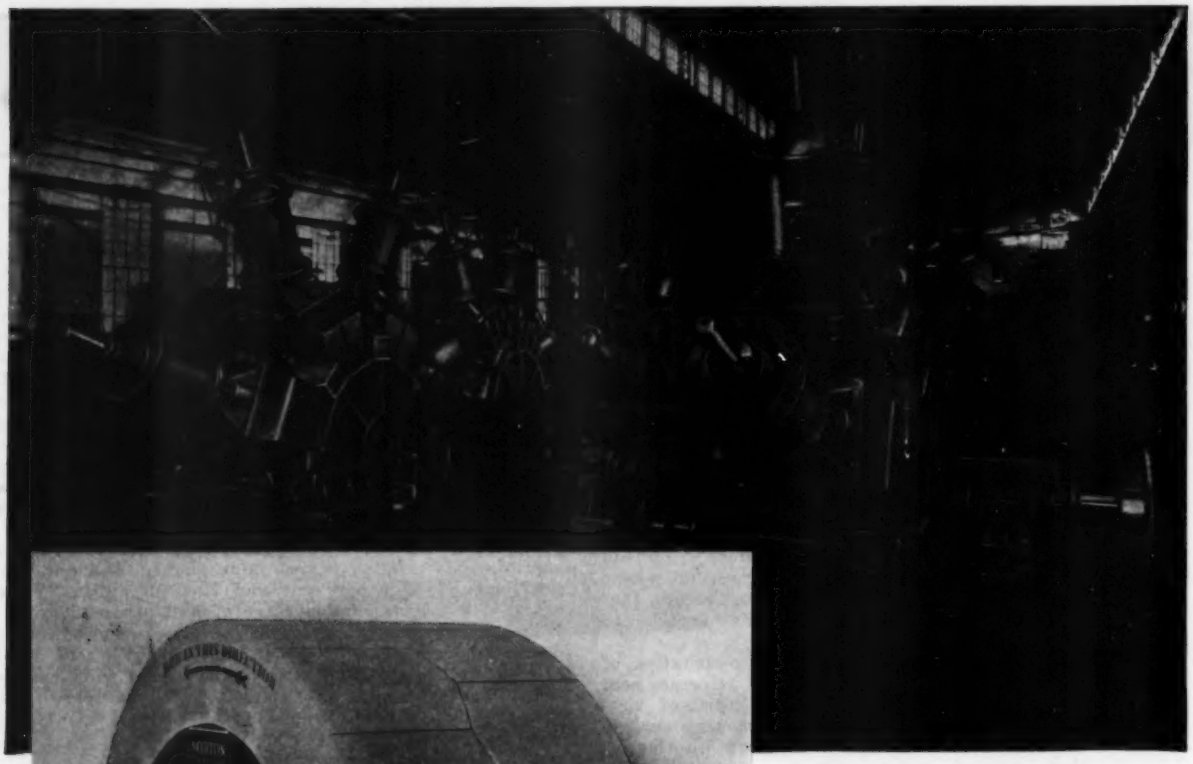
Canadian exports of pulp and paper in March were valued at $14,906,275. This was an increase of $2,972,070 over the previous month, but was $3,260,019 below the total for March of last year. Wood pulp exports for the month were valued at $3,267,236 and exports of paper at $11,639,039 as compared with $2,518,190 and $8,416,015, respectively, for the month of February. Pulpwood exports for the first three months of this year were 226,052 cords, valued at $2,037,226, as compared with 391,963 cords valued at $3,608,389 in the corresponding months of last year.

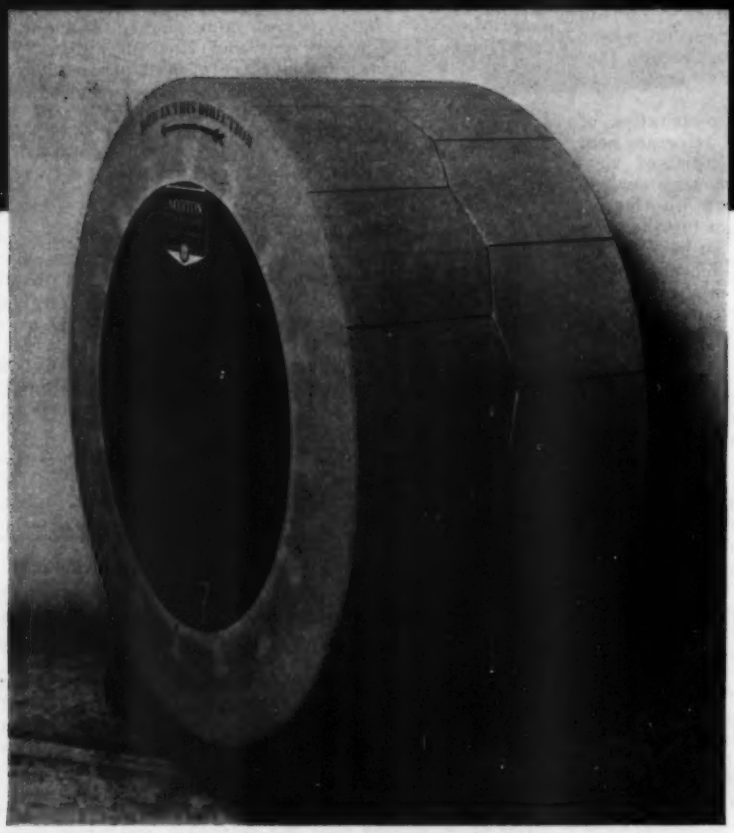
❖ QUEBEC ❖

Newsprint Institute Sued by Price Bros.

A civil action entered against the Newsprint Institute of Canada by Price Bros. for over $750,000 was started in the Superior Court at Quebec last month before Chief Justice Sir François Lemieux. A great array of legal talent was on hand. The action, which is based on an agreement stated to have been entered into between member companies of the Newsprint Institute when the Institute was formed, was in the form of a claim for $750,466 together with interest amounting to $36,695. Twelve companies, members of the Institute, were named as co-defendants in the case and several other companies were made parties to the action. Price Bros. alleged that the defendant companies owed the Newsprint Institute varying amounts of money and that the Institute in turn was debtor to the claimants for the sum stipulated in the action.

The amounts stipulated by Price Bros. to be owed to the Institute follow, the companies named being co-defendants of the suit: Abitibi Power and Paper Co. $675,615; Beathurst Pulp and Paper Co. $39,785; Beaverwood Fibre Co. $29,361; J. R. Booth, Ltd., $84,438; E. B. Eddy Co. $54,501; Fort Francis Power and Paper Co. $276,108; Great Lakes Paper Co. $346,658; Kenora Paper Mills $257,334; Lake St. John Pulp and Paper Co. $47,677; James Maclaren Co. $20,086; St. Lawrence Paper Mills Co. $167,838; Thunder Bay Paper Co. $4,976. The following companies are added to the action as mise-en-cause: Anglo-Canadian Pulp and Paper Co., Canada Power and Pa-





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per Corp.; Donnacona Pulp and Paper Co., and Port Alfred Pulp and Paper Corp.

Argument on the opening day was confined to a motion presented on behalf of 11 of the defendants who claimed the case should be transferred to Montreal where the contract in question was signed. Price Bros.' counsel opposed this opinion. and the Chief Justice took the matter under advisement.

For the year ended December 31, 1930, the financial statement of the Quebec Pulp and Paper Corp. showed a loss for the period, before providing for depreciation, amounted to $264,006. This contrasts with a loss in the preceding year, also before provision for depreciation, of $309,082. This was the third report to be issued by this company, and there was shown a total operating deficit for the three-year period of $945,664. The balance sheet reveals total assets at $10,651,827, as compared with $11,388,961 at the end of 1929. Fixed assets at $9,625,588 compare with $10,275,616 at the end of the preceding year. Investments show an increase from $311,466 to $729,932, while inventories are cut from $257,032 to $135,454 at the end of 1930.

Strong Showing by Price Bros.

The annual report of Price Bros. and Co. for the fiscal year ended February 28, 1931, makes a very good showing in view of the extremely depressed conditions in the newsprint industry during the period covered. Gross earnings show a slight reduction from the preceding year, but due to smaller fixed charges and provision for depreciation and depletion net earnings, or the amount available for the preferred and common stocks is higher than in the preceding report. In its liquid position, the company remains in good shape, current assets being higher at $9,323,927, while current liabilities, which show an expansion of about $900,000, reflecting increased bank and other loans, probably incidental to the erecting of the company's new $1,250,000 building, and stand at $4,748,303, leaving working capital at $4,575,684, against $5,196,334 at the end of the preceding year.

Operating profits for the year were $3,308,954, against $3,332,799 in the preceding year. Interest charges totalled $706,121 and depreciation $1,240,604, leaving net earnings for the year $1,362,229, against $1,351,421. Preferred dividends absorbed $431,318 and common dividends $853,664, leaving a surplus on the year of $77,247, against a surplus in 1929-30 of $58,029. Previous balance of $2,725,174 was brought forward, making a net profit and loss balance of $2,802,421 to be carried forward. Earnings on the $100 par value common equalled 2.18 per cent against 2.13 per cent in the preceding year and 2.14 in the 1928-29 fiscal year.

The construction program on the Maclaren-Quebec Co.'s project at Masson Falls on the Lièvre River is proceeding according to schedule. Some 350 to 400 men are now employed on the several phases of this undertaking, and the working force will be substantially increased when preliminary operations have been completed. During the winter, coffer dams were built and so far the foundation of one-half of the large diversion dam above the falls is being laid. A central shaft has been sunk to a depth of 150 feet and this shaft will be used as an outlet for rock and other debris in connection with the large tunnel to be constructed connecting the upper and lower sections of the river and diverting the water out of its natural channel.

The St. Lawrence mill, at Three-Rivers, which operated only three of its six paper machines during most of the winter, started up a fourth machine at the beginning of April, and on the 22nd a fifth machine was brought into production, so that at the present time 400 men are employed steadily.

At the anual meeting of shareholders of the Brompton Pulp and Paper Co., a subsidiary of St. Lawrence Corp., held in Montreal last month, C. G. Greenshields and J. E. McCrea, former members of the board, retired. Others elected to the directorate were Ernest Rossiter, N. A. Timmins, J. I. Rankin, R. W. Steele, A. F. White, R. O. Sweezey, H. A. Clarke and G. Cottrelle. R. W. Steele, vice-president, presiding at the meeting, stated that nothing had been done with regard to a possible merger of the company's properties, and it was not likely that anything would be done until other units in the industry had clarified their position.

Bondholders of the Anticosti Corp., Belgo-Canadian Paper, Port Alfred Pulp and Paper and St. Maurice Valley Corp. have been advised that continuance of bond interest is extremely unlikely, with reference made to the recently created protective committee representing all classes of securities of Canada Power and Paper Corp. In the notice to bondholders it was stated that in order to obviate the consequences of default, a plan for reorganization should be evolved and carried into effect at the earliest possible moment. The committee is at the present time stated to be hard at work on a plan for capital readjustment.

Owing to the weather conditions which prevailed this year, means to deal with the menace of forest fires had to be taken much earlier than usual, and preparations were started about one month before previous years. By the middle of April there were some 4,500 forest rangers on duty for the Government and the limit holders.

The 1930 annual report of Canadian Hydro-Electric Corp., and subsidiary companies including Gatineau Power Co., shows consolidated net revenue, after all charges and available for dividends, of $1,924,931 compared with $991,882 in the year 1929. The earnings in 1930 amounted to $15.40 a share on the 6 per cent first preferred stock of the corporation as against $7.94 a share in 1929, or two and one-half times the dividend in 1930 as against one and one-third times the dividend in 1929. Regular quarterly dividends on the 6 per cent first preferred stock, amounting to a total of $750,000, were paid during 1930, which left a balance after dividends of $1,174,931 added to surplus.

R. B. Hall, who, a couple of years ago removed from the Toronto office of the Howard Smith Paper Mills to the Montreal office of the Canada Paper Co. where he was sales manager, has now returned to the Toronto office of Howard Smith.

Arthur L. Dawe, at one time secretary of the Canadian Pulp and Paper Association, has been appointed general manager of the St. Maurice Valley Paper Co., Ltd.

O. F. Bryant, Secretary of the Technical Section of the Canadian Pulp and Paper Association, who is recuperating from his recent protracted illness, is making excellent progress, and is now able to go out-of-doors every day for a short period of time.

ONTARIO

Howard Smith Presents Consolidated Report

The third annual report of the Howard Smith Paper Mills, Ltd., covering the year ended December 31, 1930, was for the first time presented as a consolidated balance sheet and profit and loss account for the company and its subsidiaries. As explained by president Crabtree, this was done because of the large amount of the company's holdings in subsidiary companies and the extent of the latter's assets and liabilities. As a result comparisons of the figures in the 1930 report with those in the statement of the preceding year, which included only Howard Smith Paper Mills, are rendered comparatively meaningless. The subsidiaries which are included in the new balance sheet set-up are: Canadian Cellulose Co., Alliance Paper Mills, Canada Paper Co., Schofield Paper Co., Federal Paper Co., Kilgours, Ltd., and Canada Paper Wholesale, Ltd.

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"Buffalo"

Heating
Ventilating
Mechanical Draft Fans
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Air Washers

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When you install air handling or tempering apparatus, get the benefit of experienced engineers. Air engineering applied intelligently in a paper mill means dividends on the investment.

The illustration shows a 176-inch Beloit Yankee paper machine with "Buffalo" Vapor Absorption system, which is flexible in operation and gives efficient and uniform results.

Consult Buffalo engineers before you buy heating, ventilating or mechanical draft apparatus.

Buffalo Forge Company

213 Mortimer St., Buffalo, N. Y.

In Canada: Canadian Blower & Forge Co., Ltd., Kitchener, Ontario

The 1930 report reveals net profit from operations of $1,231,760. From this was deducted bond interest at $568,865; preferred dividends at $376,564 and common dividends of a subsidiary at $6,000, leaving a balance of $58,143 for the year. The balance at credit on the first of January, 1930, was $1,461,913, from which was deducted $75,000, being loss on sales of company's shares to employees, and $21,000 being adjustment to investments in subsidiary companies, which left a balance of $1,365,913. This amount, added to the balance of $58,143 above referred to, leaves a balance at credit at the end of 1930 of $1,424,056. Total assets in the consolidated report amount to $31,105,113, as against $18,253,306 in the report for the preceding year of Howard Smith Paper Mills.

Paper Makers' Safety Association

The Ontario Pulp and Paper Makers' Safety Association held its annual meeting in the King Edward Hotel, Toronto, on April 15. The report of secretary-engineer A. P. Costigane showed that, though the total number of employees during 1930 showed a decrease of 8.3 per cent as compared with 1929, the total number of non-fatal accidents had been reduced by 25.4 per cent and the time loss by 13.4 per cent. Unfortunately, there were seven fatal accidents, which was one more than in the preceding year. The woods departments conditions, however, were not as good as the mill situation, and it is expected that this department will have to face increased rates for the current year. In this connection, W. C. Miller, chief sanitary inspector for the province, stressed the fact that pulp and paper operators do not seem to take sufficient interest in the accidents in the woods. He suggested that the directors of the Association should apply themselves to the task of making the companies responsible for this heavy cost take effective steps to reduce it.

During the discussion which took place at the meeting, the fact was brought out that accident compensation in the pulp and paper industry in Ontario is heavier than fire insurance charges on various mills. Closer co-operation with the Workmen's Compensation Board, the Safety Association and various other agencies, and within the industry itself, was urged by various delegates, and George Carruthers, president of Interlake Tissue Mills, the chief speaker at the gathering, stressed the duty of paper mill companies on humanitarian as well as on economic grounds in the line of keeping down compensation rates and accident records.

Charles Ross Somerville, proprietor of the Somerville Paper Box Co., London, Ont., widely known in paper and paper box circles in Canada, and one of the Dominion's leading business men, died in New York City at the age of 75 years a few weeks ago, following an illness of several months' duration. His remains were brought to London for interment. The deceased established his paper box organization in 1890 under the name of the C. R. Somerville Co., and retired from active business life in 1910. During his long and busy life he was identified with practically every movement which had for its object the advancement of educational, spiritual and social life in London.

Hopeful signs of improvement in general business conditions for 1931 were beginning to make an appearance, S. J. Moore, president of the F. N. Burt Co., manufacturers of paper boxes, paper cups and other lines, told shareholders at the annual meeting of the company held in Toronto on March 29.

Provincial Paper, Ltd., is engaged in carrying out a number of improvements at its Port Arthur Division. A new Cameron rewinder and suction press rolls are being installed, and a sulphite storage room and enclosed loading shed are being constructed. In addition, the company is also installing a considerable amount of minor equipment for the general improvement of the mill.

With a sharp decline in earnings for the past year, Corrugated Paper Box Co. set about adjusting operating conditions to reduced business, and during the year overhead charges were considerably cut down. In order to preserve the working capital position, the company suspended payments of the preferred dividends in the middle of the year, although these would have been earned by a slight margin, 7.23 per cent as against seven per cent dividend rate. Profits were almost cut in two at $60,052 as against $114,936, which in turn was considerably lower than the $171,376 earned in 1928. The saving on dividends helped to increase net working capital from $119,285 to $195,201.

The Ontario Paper Co., at Thorold, has opened tenders for the erection of a machine shop unit, and contract has been let. This is a unit of a $500,000 expansion program, of which $92,000 is for construction.

The purchase of a property at 736 Dundas St. East, Toronto, marks nearly a decade of progress in the manufacture of paper drinking cups and kindred sanitary equipment by G. H. Wood and Co. For the purpose of distributing its products throughout Ontario, the company took over the Liquid Soaps and Sanitary Products, manufacturing chemists, in 1923, with a small plant on Jarvis St. In the same year warehouses were opened in Montreal and Ottawa. The company will use the newly acquired property for expansion purposes.

H. F. Brunton, Toronto, who for several years was Ontario sales representative of Canadian International Paper Co., has entered upon his new duties as Canadian representative of the Garrettson-Ellis Lumber Co., of Springfield, Mass. C. R. Robertson, recently in the Montreal office of Canadian International Paper, has been transferred to Toronto.

Northern Ontario this summer faces a most critical menace from forest fires, due to a light snowfall, low water level and dry weather, according to Hon. William Finlayson, Minister of Lands and Forests. Preparations were started early last month to combat what is expected to be a particularly abnormal year as regards forest fires.

W. W. Cole, who for some years was manager of the Canadian Barking Drum Co. at Montreal, has been appointed manager of the Carthage Machine Co. of Canada, Belleville.

L. F. Winchell has been appointed acting general manager of the Hinde and Dauch Paper Co. of Canada, Ltd. This announcement followed on the adoption of a resolution granting O. H. Moore, the general manager, an extended leave of absence on account of ill health. It is understood that Mr. Moore will spend the summer in Europe. Mr. Winchell was formerly sales manager of the River Raisin Paper Co., of Monroe, Mich.

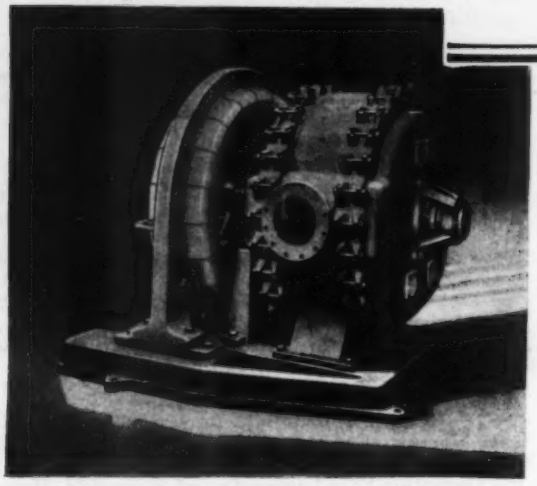
❖ BRITISH COLUMBIA ❖

The New Process De-Inking Co., Ltd., was recently incorporated at Victoria. The new firm has its head office in New Westminster and is capitalized at $10,000. While official information on the subject is unobtainable, it is understood that the firm is associated with the recent development by officials of the Westminster Paper Co. of a method of de-inking old paper for re-use.

Three men were recently killed at Powell River, and a fourth had a miraculous escape from death when scaffolding on which they were working 70 feet in the air collapsed. The men were engaged in the demolition of an old chimney on the steam plant of the Powell River Co.

Officials of Westminster Paper Co. report that interest for the year ending July 31, 1931, on the $300,000 issue of 6½ per cent first mortgage debentures was earned in the first

Nash Hytor Vacuum Pumps are furnished in capacities up to and exceeding 5000 cu. ft. of air per min. at 26 inch vacuum. Write for descriptive bulletins



IN INTERNATIONAL'S MILL *at Mobile*

TWO No. 9 Nash Hytor Vacuum Pumps, six No. 8 Hytors, three No. 7 Hytors, and three No. 4 Hytors are installed in the Mobile, Ala., mill of the International Paper Co.

Nash Hytors and other Nash paper mill equipment are relied on for a variety of important services in hundreds of mills throughout the United States and Canada.

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VACUUM PUMPS AND COMPRESSORS

RYTHER AND PRATCH COMPANY

RYTHER SHREDDER

Discharging shredded stock directly into beater.

Mounted on platform, eliminating conveyor system.

Saves furnish time, beater time and power. Especially adapted to telephone directories, catalogs and news over issues. Will make 2000 lb. furnish in fifteen minutes.

Excessive peak loads on beater entirely eliminated as shredded stock is in uniformly fine pieces. Can be mounted on truck if desired.

Canadian Ingersoll-Rand Co., Ltd.
10 Phillips St., Montreal, P. Q.

three months of operation. The new plant, which replaced the one destroyed by fire, went into operation in June of last year and has operated on full schedules ever since. Efforts are being continued to expand the company's export business, president J. J. Herb being at present on a business tour of the countries bordering on the Pacific, including Japan and China. Not being engaged in the newsprint business, this company is not affected by the depressed state of the newsprint market.

NEW BRUNSWICK

Fraser Companies Sustain Heavy Losses

As expected, the annual report of Fraser Companies, Ltd., for the year ended December 31, 1930, shows a heavy falling off in earnings, which were insufficient to provide for fixed charges. Net operating earnings, after operating expenses, taxes, and provision for bad and doubtful debts, but before depreciation, interest and depletion, were only $278,289, against $1,419,961 in the preceding year.

It was considered advisable, in view of declining markets for lumber, to make further provision for losses in inventory of lumber, logs and pulpwood, which item was accordingly written down by $1,938,215, resulting in a net deficit on the year's operations of $1,659,925. During the year, bond debenture, note and other interest required $1,737,153 and $822,391 was written off for depreciation and depletion. These charges resulted in net loss of $4,219,470 from which, was deducted the previous balance at credit of profit and loss account of $937,900, leaving net deficit of $3,281,569 as at December 31, 1930.

Despite the provision of additional funds during the year, operating losses and the heavy shrinkage in lumber inventories caused a substantial loss in working capital, and in consequence it has been deemed wise to postpone payment of interest due April 1 on the issue of 6½ per cent debentures.

The Hinde and Dauch Paper Co. of Canada has completed arrangements with the Wilson Box Co., of Saint John, for the manufacture of corrugated paper boxes for New Brunswick consumption. The agreement is said to be on a royalty basis. It was believed that the Hinde and Dauch Co. would open its own plant at Saint John, but this decision was discarded in favor of the present plan.

The Province of New Brunswick is taking steps to stimulate the development of both its forest and mineral resources, and a new forestry and geology building has just been opened at the University of New Brunswick. The Department of Forestry has a tract of forest 3,640 acres in extent lying almost adjacent to the University campus, where the students can receive practical instruction in their course.

NOVA SCOTIA

Contract for the construction of the new plant of the Maritime Paper Products, Ltd., a subsidiary of Hinde and Dauch Paper Co. of Canada, has been awarded to W. G. Foley and Co., Halifax, who have already commenced work. The plant will be completed early in June, when it will immediately commence operation to take care of contracts now on hand from most of the principal users of corrugated cartons in the Maritime Provinces. The building, of brick and steel construction, will be about 300 feet long and will contain 20,000 square feet of floor space. The total cost, including machinery, is estimated at over $100,000.

Col. C. H. L. Jones, president of the Mersey Paper Co., Brooklyn, N. S., has been elected a member of the board of directors of the Liverpool Board of Trade.

Abitibi Declares Regular Dividend

Directors of Abitibi Power and Paper Co. have declared the regular quarterly dividend on the six per cent preferred stock, payable April 20 to shareholders of record April 10. It will be recalled that in the annual report recently issued for 1930 the company was able to show earnings of 47 cents per share on the common, a showing which was regarded as favorable in view of the vicissitudes of the newsprint industry during the past year. Maintenance of the quarterly dividend on the six per cent preferred stock was therefore not unexpected.

The Provincial Government has been petitioned by the citizens of the town of Sturgeon Falls to interfere in the pulp and paper situation with the idea of having the mill of the Abitibi Power and Paper Co. opened. The Government is also seeking to have the Abitibi mill at Fort William reopened, according to a statement by Premier Henry.

ENGLAND

Object to Diverting Transport of Paper

It has recently been suggested that paper mill traffic, which is among the heaviest for which motor transport is used on our main roads, should be diverted to the railroads which are built to carry heavy traffic. The tonnage sent out from British mills for home consumption approximates 25,000 tons per week, and about half this amount is conveyed by road transport. Doubt has been expressed, however, as to the present capability of the railway companies to offer sufficient inducement to the paper mill proprietors to justify the change.

One cynic points out that in spite of the fact that the paper which has traveled by rail has an extra thick wrapping put round every two or three reams, it is seldom delivered in perfect condition, and frequently a not inappreciable proportion of the reams have been buckled if the paper is anything larger than medium; whereas the paper conveyed by motor transport is almost invariably delivered in undamaged condition although it has only the ordinary ream wrappers. Although it would probably be less costly to send paper by rail, the deciding factors in favor of road transport are speed and certainty of delivery, safety, and less cost in packing materials. Although many of the paper mills own their own railway sidings and the paper is packed in the railway trucks by their own workmen, carelessness in unloading is responsible, it is considered, for a great deal of unnecessary damage.

Forty-first Meeting Edward Lloyd, Ltd.

On March 30, the 41st ordinary general meeting of Edward Lloyd, Ltd. was held in London, and Sir Gomer Berry, deputy chairman of the company presided. The chairman pointed out that a drop in profits was due to the general depression in trade, and new plant costing £400,000 which came into operation at the beginning of last year had not brought in the satisfactory return that it would have done in normal times.

During the past four years, the company had spent over £1,000,000 on new plant. The newsprint trade was going through a very difficult time, and they were faced with competition from other countries where longer hours were worked and considerably higher wages paid. The result was that foreign mills could quote prices in this country much lower than our actual cost of production. Even the mills in Canada and Newfoundland were kept running longer hours than in this country, which meant a considerable saving to Dominion producers in costs of production. The total tonnage of newsprint being imported into this country was now approximately 400,000 tons per annum.

If the bulk of this tonnage were made at British mills, the chairman went on to point out, it would mean not only that all the unemployment in the British industry would be fully taken up, but it would also mean that a new plant could be in-

Protect your machine room against ROOF ROT with CORKBOARD

. . . . . This efficient insulation eliminates costly shutdowns and prevents damage to your product from ceiling drip.

[*Roofs protected with Armstrong's Corkboard, will serve for many years without necessity of replacement. The above photograph shows Corkboard being applied to the roof of the Henry Vogt Machine Co. plant, Louisville, Ky.*]

MACHINE rooms are hard on roofs. With tons of water being evaporated from the paper, some moisture is always present in the air of the room. It works into unprotected roof decks and causes rot, shortening the life of the roof tremendously.

Try insulating this roof with Armstrong's Corkboard. Paper mills which have used this insulation tell us it accomplishes three definite results. In the first place, it eliminates ceiling sweat, caused by condensation on the under side of the roof. This condensation takes place only when heat escapes through the roof, leaving a chilled surface behind. Moisture in the air meets this surface, condenses and forms damaging drip. By stopping the heat loss, insulation checks the drip and eliminates damage to materials and machinery.

Armstrong's Corkboard on the roof is also responsible for lower fuel bills. Mills that have applied this efficient insulation to their roofs find that the saving in fuel is important.

Finally the cork-insulated roof lasts much longer than one that is not protected from moisture. Even after ceiling sweat has been stopped, there is moisture present close to the ceiling of the machine room. Some of it penetrates ordinary roofs and causes decay. But cork is highly moisture-resistant. The layer of corkboard forms a permanent barrier against decay that enables the roof to stand up in hard service that would cause an unprotected roof to deteriorate quickly.

Every paper mill man should have a copy of the book "The Insulation of Roofs to Prevent Condensation." We'll gladly send it to you without charge. Address Armstrong Cork & Insulation Company, 904 Concord Street, Lancaster, Pennsylvania; or Canadian offices in Montreal, Toronto, and Winnipeg.

Armstrong's (A) *Product*

Armstrong's Corkboard Insulation

for the Roof of Every Building

stalled that would give permanent employment to a large number of additional men in the British paper trade, and its allied industries.

Following the efforts during the last few years to standardize paper dimensions and measurements, and the earlier and successful steps taken to standardize type, it has now been suggested that a practical step would be to harmonize the essential printing trio—paper, type, and ink—by ensuring that in every printing house there should be a range of ink of a character and consistency to suit the quality, sizing, and surface of the paper required for a particular purpose. It is pointed out by one trade journal that those who are not thus happily equipped, either with inks or with expert paper knowledge, by sending a sample of the paper to be used to a leading firm of ink manufacturers would have the most suitable class of ink placed promptly at their disposal.

The Finnish paper firm Kymmne Aktiebolag has acquired the Yorkshire Paper Mills at Barnsley. This company also controls the Star Paper Mills, Ltd., at Blackburn, and the two will be run in conjunction, and also with the British interests in the Finnish company. At one time efforts were made to get a German firm to take over the mills when it became probable that they would be closed and thus cause a heavy blow to fall on the district. The efforts were unsuccessful, and the mills closed last October. The new manager of the mills R. H. J. Melhuish, was previously connected with the North of Ireland Paper Mills Co., Ltd.

At the annual meeting of W. V. Bowater & Sons, Ltd., it was announced that the profit for the year amounted to £53,063, as against £51,073 for the previous year. The opening of the Bowater's Mersey Paper Mills, and the acquisition of the Empire Mills brought the productive capacity of the newsprint mills associated with the company to a total in excess of 200,000 tons per year. The net profit of John Dickinson & Co., Ltd., for the past year amounted to £183,651, compared with £215,945 for 1929, owing to adverse conditions abroad coupled with the effect of a general decline in prices. The capital was increased last May by the issue of 200,000 ordinary shares.

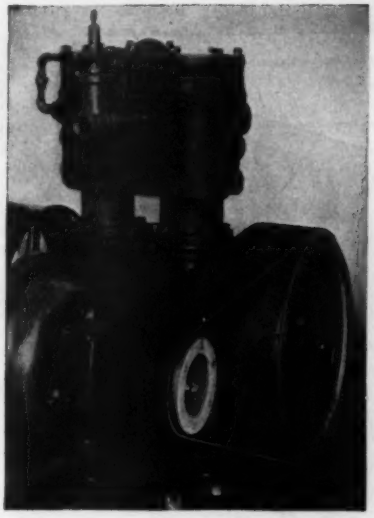
During January of this year, 408,163 hundredweight of non-coated printing papers were imported into this country, representing a total value of £269,441, while newsprint and other kinds of papers imported are represented by the following figures: 53,107 hundredweight, value £56,457. It is interesting to compare these figures with those for February: Printed, non-coated, and news imports for that month were 199,684 hundredweights, value £126,974, and other kinds were represented by 46,529 hundredweights, value £49,218.

Dr. Walter Brecht Succeeds Prof. Friedrich Müller

Prof. Dr.-Ing. Friedrich Müller, for the past 18 years instructor in papermaking at the Technical College in Darmstadt, Germany, has resigned and is succeeded by Dr.-Ing. Walter Brecht. Professor Müller is widely known as an author and Doctor Brecht, his successor, has many friends in the United States, having been connected for a year and a half with the research laboratory of the Hammermill Paper Company in Erie, Pa. He has been associated with the Haindl'sche Paper Mill in Augsburg, Bayern, for the past five years. For a young man he is one of the best informed pulp and paper technologists in Europe, and his appointment to the Dresden School of Papermaking is regarded as a fitting recognition of his scholarly attainments, such as will please his friends and admirers in this country.

The International Derrick and Equipment Company and the Stacey Engineering Company, which operates the P. H. & F. M. Roots Company and the Connersville Blower Company, have merged forming a new company to be known as the International Stacey Corporation. Headquarters will be in Columbus, O.

More Than



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When a product possesses that elusive element known as "quality", you may be sure that it did not come by it accidentally.

Over 65 years of research, expert craftsmanship and the honor and integrity of the maker are reflected in VIM Leather Belting.

Naturally, the initial cost of such a product cannot be the cheapest. But think of the years ahead. Figure costs on that basis and the extra quality you paid for in VIM will pay dividends in years of uninterrupted service and maximum power transmission.

VIM is the highest quality belt made and it has no peer.

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And All Over LEATHER VIM BELT *the World*

Felt Problems? let us help you solve them now

Why let felt problems disturb you when a request to us will put our 40 years experience to work solving your felt problems?

Call on us anytime . . . we'll gladly help you.

Appleton Felts and Jackets are today standard for quality and service—your guarantee of satisfaction that comes from the use of felts that are made for the definite requirements of the customer. Our standard of high quality is rigidly maintained through a plant control of operations that involves careful checking and rechecking of every operation—all for the benefit of the mills who rely on our quality and service.

APPLETON WOOLEN MILLS
Appleton, Wisconsin

Appleton
Felts and Jackets

❖ NEW ENGLAND ❖

Survey Reflects Condition of Mills

The March statistics of the Massachusetts Department of Labor and Industries show activity in paper and pulp mills in that state as 83.6 per cent of capacity compared to 93.7 per cent a year ago. It is suspected, however, that these figures do not include several mills which are known to be on part time particularly in the paperboard industry but the percentage is fairly indicative of production in the fine writing and book papermaking division. Twenty-seven mills whose normal full time production requires 6,455 persons had 5,694 men and women at work of whom but 1,843 were on full time. It was a slight gain both in part time and full time employment from February.

Earnings statements of paper companies for the first quarter of 1931 were indicative of business conditions, and reflected also the caution that is exercised by all boards who regard the immediate future as very uncertain. The first prominent instance was the failure of the Brown Company, of Portland, Me., and Berlin, N. H., to declare its usual dividend on the preferred issue. There is $10,000,000 of this stock outstanding in addition to $23,846,500 in bonds. The 400,000 shares of common are entirely held on the common and of course no dividends have been paid on that.

The quarterly $1.75 due this month on the stock of S. D. Warren Co., Boston and Cumberland Mills, Me., was also omitted. Directors of this company felt that the seasonal decline in business which could be expected during the second quarter was ample reason for withholding payments now even though the company earned a small profit after all charges during the first quarter. Sales were about the same as during the last quarter of 1930.

The American Writing Paper Co. had a net profit of $28,000 during the first quarter of the year, according to President S. L. Willson, compared with a loss of $64,000 during the last quarter of 1930. Mr. Willson is optimistic and reports an upward trend in sales and consequently in operations of his company as compared with the last period of the previous year. He believes the depression depth was reached at the end of the year and that by the end of the present year re-established confidence will result in 1932 prosperity.

Favors HCL Casein

Dr. Raymond W. Bell, U. S. Department of Agriculture, speaking before the Paper Committee of the New England Purchasing Agents Association at its monthly luncheon meeting, April 13, strongly favored hydrochloric acid type casein over that produced by the natural lactic acid method or the sulphuric type. The Doctor's talk was an outline of the various manufacturing processes and a description of the ideal qualifications of good casein, particularly its pH or acid condition, viscosity, adhesive qualities and strength. Questioned by committee members as to comparisons between Argentine and domestic types the Doctor contented himself with a description of variations, particularly the relative dryness of the South American, and its production by the lactic acid process. He felt that American made casein was as fine as could be obtained.

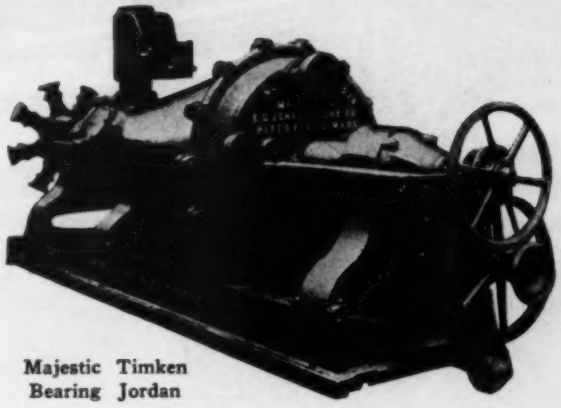
The hydrochloric method received great impetus during wartime when much casein was used for an airplane wing process. The Department of Agriculture has improved methods of skim milk production and its quality by education. Present equipment is largely antiquated and improved domestic types generally will follow better machinery.

The meeting, held at the Boston Chamber of Commerce, was presided over by Franklin Wyman, of Falulah Paper Co.

A fire said to have caused damage of some $30,000 occurred in the shingle department of the Safepack Mills, Millis, Mass., on April 8. The mill was closed for a few days but reopened shortly thereafter.

Jones

A name that has won a world-wide reputation through 75 years devoted to paper-making progress



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JONES JORDANS are made in six sizes; belt or motor driven, and equipped with babbitted, roller or ball bearings . . . also bandless or banded plugs.

Refining engines are built in two sizes for refining screenings and for auxiliary beating and with the same optional features as the Jordans. Our method of coupling, whereby the motor moves integral with the plug, is standard equipment on all these machines.

PAPER-MAKING MACHINERY ESTABLISHED 1826 PITTSFIELD, MASS.

E. D. JONES & SONS COMPANY
PITTSFIELD · MASSACHUSETTS
BUILDERS OF HIGH GRADE MACHINERY FOR PAPER MILLS

HIGH SPEED WINDER
for NEWS, BOOK and KRAFT MILLS

CAMACHINE 20, as shown in the illustration, is built in widths up to 302″ and runs at speeds up to 3,000 f.p.m. winding finished rolls to diameters of 36″. Among the many exclusive patented features incorporated in this winder is a system of counterweights for decreasing the pressure of the riding roller as the rolls grow in size and weight, and also a system of grooved drums which remove wrinkles from the web of paper. Various other refinements combine to produce rolls hard from the core out, straight on the ends and free from slitter cracks or checks on the edge.

NEW FEATURE FOR REVERSING WEB IN WINDING; CAMERON PATENTED METHOD WINDS ROLLS WIRE SIDE IN OR OUT

CAMERON MACHINE COMPANY

61 Poplar Street Brooklyn, N. Y.

New Machines of the Maine Seaboard Paper Company Establish Splendid Records

The two new paper machines of the Maine Seaboard Paper Company at Bucksport, Maine, have made a remarkable showing. The first of these two machines to be placed in operation was started less than one year after ground was broken for the erection of the new mill. Two weeks later the second machine was placed in operation. On March 3, 1931, less than four months after the first machine was placed in operation, these machines were producing newsprint at a rate within ten per cent of their maximum capacity, turning out a sheet at the rate of 270 tons per 24 hours and at a paper speed well over 1,000 ft. per minute.

The two paper machines are 228-inch fourdriniers built by the Rice Barton & Fales Company. These machines are of the most modern construction and include a Beloit couch with Beloit removable wire, two suction presses, 48-60-inch dia. dryer rolls driven in four sections, a calender stack and reel. The paper machines are served by special Rice Barton & Fales 2-drum winder. With the exception of the calender stacks all rolls on these machines are mounted in anti-friction bearings.

The paper machines are equipped with the most modern type of sectional electric drive. Power for each drive is furnished by an individual 575-kw. 275-volt, 1,200-r.p.m. synchronous motor generator set. Each section of the machine is driven by an individual direct current motor connected to the intake shaft of the paper machine by enclosed helical type gear units. The starting generator system of control is used and the speed of each section is accurately regulated by means of the well-known Westinghouse carbon pile speed regulator. The winders are driven by multiple motor variable voltage winder drive. The complete electrical equipment for these machines including motor generator sets, motors, gear units, control and speed regulating equipment, and winder drive were designed and built by the Westinghouse Electric and Manufacturing Company.

A very novel feature used in connection with the winders is the application of a braking generator and tension control. By the use of this special equipment, the tension in the sheet of paper between the unwinding stand and the winder is automatically maintained as the paper is unwound from a full to an empty reel, thus assuring an evenly wound roll. Moreover the energy which, with the ordinary drive, is dissipated in a mechanical brake, is returned to the drive through the braking generator and serves to assist in driving the winder.

Association Items

The May meeting of the New England Paper Merchants Association will be held in Worcester, Mass., with a dinner at the Hotel Bancroft, followed by golf the following day at a nearby Club. Graham Blandy, of the Charles A. Esty Paper Co., is committee chairman.

The Boston Paper Trade Association departs from long custom and will make its annual meeting a two-day affair; such is the affluent condition of the treasury. It will be held at the Hotel Preston, Beach Bluffs, Swampscott, the gathering to have a dinner there on the evening of June 8, with a golf meet the next day at the Salem Country Club. A mail vote was taken to decide between the North Shore location and the South Shore at Scituate, with more than twice as may favoring the places chosen.

It is reported that the bags mentioned in a recent report which the New England Ice Dealers Association members will use this summer for the sale of 25 pounds of cracked ice for 25¢, are the heavy kraft type used for coal. Dealers have not sought a particularly waterproof variety as the cracked ice is kept in storage, perfectly frozen, until sold, and the assumption is that between the time of sale and use there is little lost.

Lincoln G. Gurnett, of the Brown Co., Portland, Me., was killed in an automobile accident near Windham, Me., when his new car which he was trying out ran into a fence. He

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TITANOX-B
(Barium Base)

Due to its high opacity, remarkable whiteness, exceptionally fine particle size, chemical inertness and high bulking value, Titanox-B (Barium Base) is helping leading paper manufacturers improve the quality of "super" and coated paper stocks.

Titanox-B is a true, composite, opaque pigment . . . a white, fine, uniform powder consisting of Titanium Oxide precipitated upon and coalesced with barium sulphate (blanc fixe).

In some cases the use of Pure Titanium Oxide (TiO_2)—another of our products—in combination with china clay is desirable.

Investigation may prove that Titanox pigments can be used to improve the quality of your products. Write our nearest branch for information.

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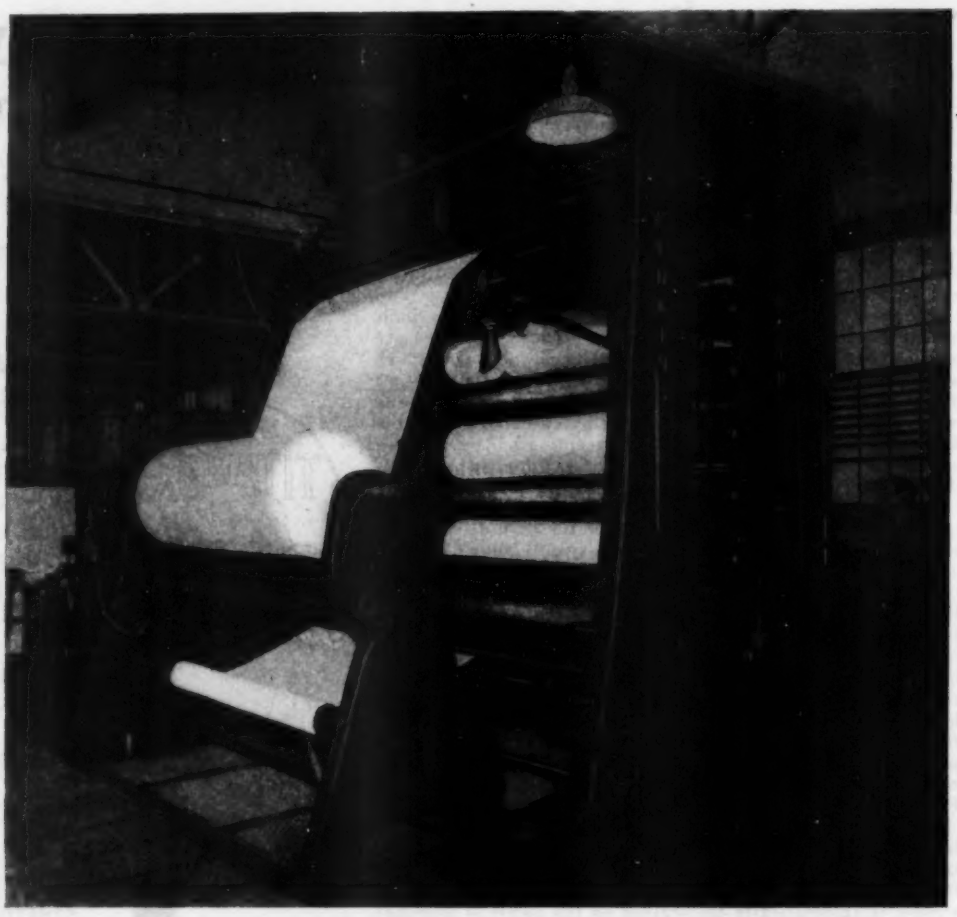
'No Calender can be better than the Rolls in it.'



PERKINS ROLLER BEARING WEB SUPERCALENDER

PERKINS Calenders are distinguished because the strength necessary for smooth steady operation, even under most severe working conditions, is built into them.

PERKINS builds Calenders for speed, quality of output, uninterrupted quantity production, ease of operation and economy in power.

The Seven-Roll Roller Bearing Web Supercalender is an example of Perkins construction.

B. F. Perkins & Son, Inc., Holyoke, Mass.

Engineers and Manufacturers

TRADE MARK REG. U.S. PAT. OFF.

Cotton Rolls	Web Supercalenders	Mullen Paper Testers
Paper Rolls	Friction Calenders	Tensile Testers
Embossing Rolls	Embossing Calenders	Ventilating Fans
Chilled Iron Rolls	Sheet Calenders	Rag Cutters
Granite Press Rolls	Platers	Stock Cutters
Glassine Supercalenders		Paper Dampeners
		Bleach Ejectors

was 67 years of age and had a long career in the paper industry starting on the west coast. He came to the Brown Company more than two decades ago, first as purchasing agent and more recently as financial manager.

Traffic Items

The New England Freight Association has docketed a reduced rate of 35¢ on wood pulp from Berlin, N. H., to Richmond, Va., to bring it into consonance with rates to similar points. The previous rate was 38¢.

An exceedingly sharp paper rate reduction has been made in the tariff on embossed, engraved, lithographed or printed paper cards from converters' plants in the Holyoke district to New York as follows: to Harlem River, present, 44¢ proposed, 20¢; New York City and Brooklyn, present, 44.50¢, proposed, 20¢; to New York Harbor Lighterage points, present, 47.50¢, proposed, 23¢. Motor truck competition is the reason for the adjustment.

Rates on paperboard, bindersboard, boxboard, etc., Westchester, Conn., to Washington, D. C., present 34¢, proposed, 29.50¢. This change was made to bring the rate in question into agreement with Washington Publishers Association vs. B. & O. R. R. decision.

Pulp from Canada and from foreign ports elsewhere will henceforth take the same rate—14.50¢ per 100 pounds to Versailled, Conn., from Boston; hitherto the rate applied only on shipments originating in Canada.

The intercoastal rates which are subject to fluctuation in view of the abandonment of the conference, remain at 45¢ per 100 pounds on printing, wrapping and bags, westbound. Rates on wood pulp eastbound for cargo shipments have been as low as 30¢ per 100 pounds, and in some cases rumors of less are heard.

Charters have been already arranged for the import of some 65,000 cords of pulpwood from Canadian and Newfoundland points by vessel to Portland, Me. The Oxford Paper Co., is bringing 25,000 cords, the Hollingsworth & Whitney Co., 35,000 cords and the S. D. Warren Co., a mere 1,000 cords as the bulk of their pulp, particularly their sulphite is now being made for them on the Pacific coast. In addition, there will undoubtedly be a considerable movement for the account of the International Paper Co., which has not at this writing intimated the extent of this, as it will be Russian stock and the situation in that respect is still a bit hazy. Most of the wood mentioned will be discharged at the Bancroft & Martin Company's dock at Ligonia on Portland Harbor.

1931 Eastern States Exposition

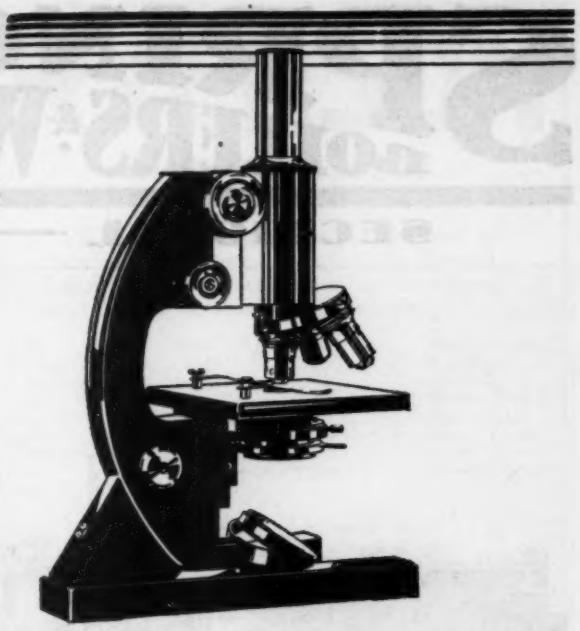
From all indications, the 15th annual Eastern States Exposition to be held September 20 to 26 at Springfield, Mass., will present one of the most widely diversified and best balanced industrial exhibitions since the exposition was established in 1916.

Demand for space is excellent. Notably among the exhibits are those of chemicals, paper, papeteries and specialties. In 1930 there were 306 individual concerns in the industrial arts divisions drawn from 30 states and Canada, occupying eight acres of exhibition space.

Pratt & Austin Manufacturing Company, of Springfield, Mass., has been incorporated under Massachusetts laws to deal in convert paper, cardboard, and paperboard. Capital stock is $10,000. The incorporators and officers are F. Raymond Austin, president; C. N. Pratt, vice-president, all of Springfield.

The Royal Paper Box Company, of Boston, has been incorporated to manufacture and sell paper boxes with a $10,000 capital. George Greenbaum is treasurer.

The Government ban on Canadian labor has hit the timber cutters of northern New England, particularly Maine, very hard. Surprising though it is, the fact remains that in-



Your paper is known by the Quality it keeps

and the only way to maintain uniform high quality is by precision laboratory control. B & L Laboratory Microscope GS is an instrument so designed as to comply with the official requirements of TAPPI. It has a range of magnifications from 20X to 1000X, making it suitable for such purposes as determination of fibre composition, fibre counting, identification of fibres, degree of beating, identification of foreign particles in making dirt counts on the finished stock, identification of starch used in sizing and for all routine examinations of paper.

The GS is an excellent instrument for photomicrography. Such accessories as mechanical stages, stage and eyepiece micrometers that are guaranteed accurate, polarizing equipment, microscope illuminators, microtomes, etc. are also available at Bausch & Lomb.

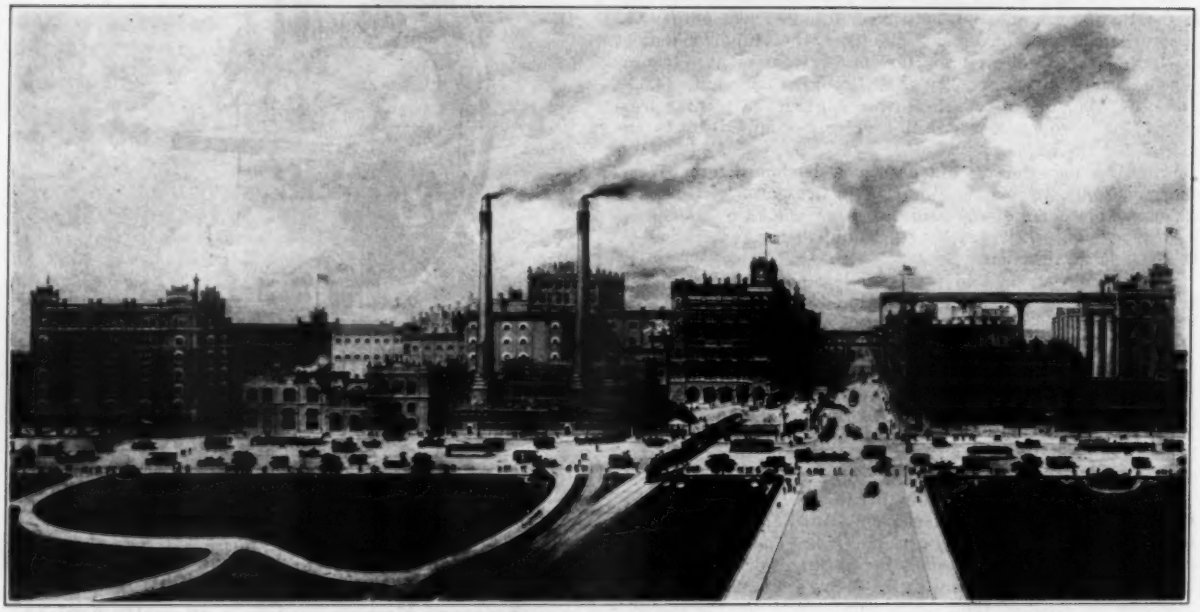
Write for complete information.

Bausch & Lomb Optical Co.
630 St. Paul Street Rochester, N. Y.

Makers of Orthogon Eyeglass Lenses for Better Vision

SPRINGFIELD BOILERS & WATER WALLS

SECTIONAL —— ALL STEEL



ANHEUSER-BUSCH, INC.
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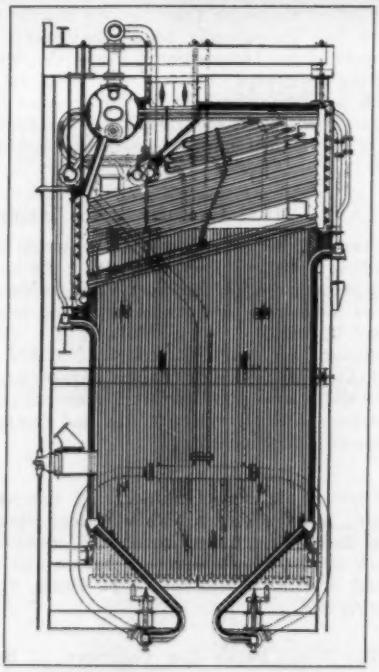
THREE 1076 Horse Power COMPLETE SPRINGFIELD UNITS built to operate at 500 LB. PRESSURE generate all steam used in this mammoth industrial plant.

Leaders in Industrial and Utility plants throughout the Country are installing SPRINGFIELD UNITS.

Complete Springfield Units are built in all sizes and for all pressures.

Write for Catalog.



REPEAT ORDERS CONSTITUTE THE LARGEST PART OF OUR BUSINESS

SPRINGFIELD BOILER CO.
SPRINGFIELD, ILLINOIS

OFFICES:
Chicago Richmond
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SPRINGFIELD BOILERS

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Pittsburgh Cincinnati
Kansas City Minneapolis
St. Louis Houston

sufficient native labor is available for cutting and timber driving. So discouraged have operators become that there has been talk of many discontinuing, altogether, although this will not affect Great Northern Paper Co., and a few others. Two newsreel companies are photographing log drives this Spring on the theory that they may be the last big ones in the Pine Tree State.

Walter L. Reagan, 51 years of age, superintendent of the Natick Box & Board Co., of Natick, Mass., was killed during the past month while driving his car over the Worcester highway near Natick. He is survived by his wife and two children.

Frank Dugan, purchasing agent of the Penobscot Chemical Fibre Co., Great Works, Me., died last month. He had been with Penobscot for 28 years, although but 45 years of age at his death.

The Warren Box & Printing Company has been chartered to manufacture and sell paper boxes. The capital stock is $30,000. The officers are James F. Farley, Boston, president; Benjamin F. Beebee, Medford, treasurer.

The Sawyer Card & Paper Company, 32 Oliver street, Boston, has acquired manufacturing space in the Harbor Building, 470 Atlantic avenue, Boston, where it will be in a position to expand the business which has been growing rapidly.

O'Connel Quirk Paper Co., of Holyoke, merchant, has been incorporated with $50,000 capital. Officers are E. P. O'Connell, president; Thomas E. Quirk, treasurer.

The Standard Box Co., an old line paper box company of Chelsea, Mass., has chartered with $250,000 capitalization. William B. Hirshon is president and treasurer.

❖ NEW YORK CITY ❖

International Income Rises

The report of the International Paper and Power Company and subsidiaries for the year ended December 31, 1930, shows a consolidated net income of $4,206,524 after depreciation, interest, Federal taxes, etc., equal to $4.58 a share on 918,031 shares of 7 per cent preferred stock outstanding. This compares with $4,011,762, or $4.41 a share on 910,217 shares of 7 per cent preferred in 1929. The consolidated net income for the final quarter of 1930 was $1,960,539 after taxes and charges, equal, after dividends on 7 per cent and 6 per cent preferred stocks, to 33 cents a share on 998,228 shares of no par Class A stock. This compares with a net income in the preceding quarter of $974,874, equal to $1.06 a share on the 7 per cent preferred, and $1,581,094, or $1.74 a share, on the 7 per cent preferred in the fourth quarter of 1929.

Total production of paper and pulp by the International Paper and Power Company and subsidiaries during the calendar year 1930 was 1,494,127 tons, compared with 1,415,843 tons in 1929, according to a statement by Archibald R. Graustein, president of the company. Manufacturing capacity last year was materially greater than in 1929, due to the completion of the Dalhousie Mill, a full year's operation of the Mobile Mill, the acquisition of the Waterway Mill and also to increased efficiency resulting in higher production at other mills of the company.

Parsons & Whittemore, Inc., of 10 East 40th street, New York, announce that E. R. Southouse, who has been associated with the organization for eight years as manager of the London office, is now located in New York and has been appointed vice-president in charge of sales. Mr. Southouse

RYERSON

IMMEDIATE STEEL FOR MAINTENANCE AND REPAIR

When something breaks . . . and steel is needed in a hurry . . . you can depend upon Ryerson for quick action. Complete stocks of all steel products, including:

Bars	Wire	Babbitt Metal
Shapes	Chain	Tool Steel
Structurals	Turnbuckles	Bar Iron
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Sheets	Boiler Fittings	Safety Treads
Rivets	Corrugated Sheets	Small Tools
Bolts	Concrete Reinforcing	Machinery
Nails	Welding Rods	

Write for the Journal and Stock List — the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON Inc.

Chicago Milwaukee St. Louis Cincinnati Detroit
Cleveland Buffalo Jersey City Philadelphia Boston

STEEL

YOU PAY FOR SOFT WATER WHETHER YOU HAVE IT OR NOT

Raw water, or partly treated water, are expensive to use in power or process steam plants. The excess plant maintenance, the reduced efficiency and the uncertain results to be obtained build up an expense account that is an unfair burden to production costs.

Graver Water Treating Equipment will save its cost in only a short period of service. Its further use is *clear profit.* Ask our engineers to estimate the savings that Graver can make for *you.*

GRAVER TANK & MFG. CORP.

East Chicago, Indiana

Manufacturers of

GRAVER

WATER TREATING EQUIPMENT

also

Special and Standard Tanks—Special Plate Construction

HOW VALUE IS ASSURED IN EVERY HAMILTON FELT

Good wool *and* ruined wool *. . . is only a matter of a few degrees here . . .*

BECAUSE the critical temperatures in drying the wool after it emerges from the scouring process are only a matter of a few degrees, the heat in the drying machines at the Shuler & Benninghofen Mills is automatically controlled.

If the wool should get too hot it becomes scorched and dried out. This ruins its life and strength.

On the other hand, if the drying process is carried on too slowly, production lags. Costs mount up.

Our three generations, almost 75 years of experience, have shown us the temperature at which wool can be dried quickly without impairing quality in any way.

This automatic control of temperature, typical of the control that is exercised throughout the entire Shuler & Benninghofen plants, is an example of the ceaseless effort constantly made to maintain an unvarying standard — to assure that every Hamilton Felt of a kind is identical to every other Hamilton Felt of the same kind.

Uniformity is a quality the papermaker needs for uniformity in production. You can see this uniformity for yourself in a trial of Hamilton Felts over a period of months.

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

SHULER & BENNINGHOFEN, Hamilton, Ohio

Miami Woolen Mills, Established 1858

Hamilton Felts

has been in the paper industry for 26 years and has had a wide experience in Europe and Australia.

Paper Association Officers

At the annual meeting of the Paper Association of New York City, held in the Arkwright Club, Oswald S. Marquardt, of Marquardt, Blake & Decker, Inc., was elected president for the ensuing year; Robert Schmidt, of the Miller & Wright Paper Company, vice-president in charge of the Fine Paper Division; Richard Bauer, of Richard Bauer & Co., vice-president in charge of the Wrapping Paper Division; H. B. Thurston, of Conrow Bros., treasurer, and Irwin Slote, of 41 Park Row, New York, secretary.

Directors of the Fine Paper Division chosen were Bertram E. Linde, J. E. Linde Paper Company; George McKinney, F. A. Flinn, Inc.; J. Harry Londergan, Henry Lindenmeyr & Sons; E. M. Whitehead, Whitehead & Alliger Company; Max Greenbaum, Beekman Card and Paper Company, and Robert McGrath, Joseph I. Grady, Inc.

Directors of the Wrapping Paper Division were James F. Levens, George W. Millar & Co., Inc.; Elwin Walker, Walker-Goulard-Plehn Company; William E. Ebbets, Coy, Disbrow & Co., Inc.; Richard C. Kettles, Charles F. Hubbs & Co., and George W. T. Skinner, Skinner & Co.

Equity Receivers Appointed

E. W. Backus, E. W. Decker and Charles Fowler, of Minneapolis, Minn., who on February 28 last were appointed receivers in an equity action by Federal Judge Joseph W. Molyneaux, were named ancillary receivers by Judge Knox in the Federal Court in New York City on April 8.

The company, which was incorporated in 1908, is described in the complaint as one of the largest producers of newsprint paper in the world and is said to control or have a substantial interest in a number of affiliated corporations. The company and its affiliated companies operate as a single unit in the production, distribution and sale of newsprint, pulp, lumber and forest products.

The complaint lists among the liabilities a bond issue of $15,400,000 maturing 1931-45, a bond issue of $4,000,000 maturing in 1948 and a bond issue of $5,000,000 maturing in 1950. The issues are secured by a first mortgage. The company is said to be solvent, with assets worth several million, but is stated to be unable to meet matured and maturing obligations.

Oliver H. Sawyer

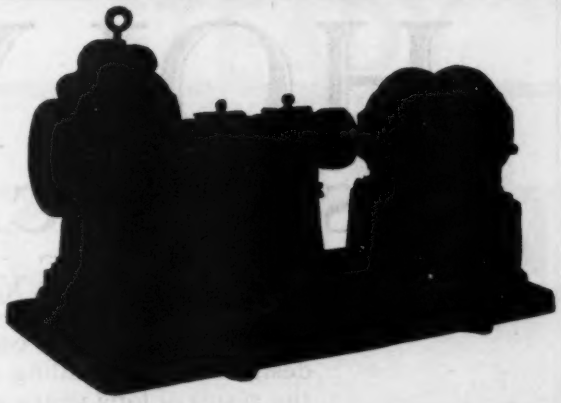
Oliver H. Sawyer, a paper manufacturer's agent, with offices at 97 Warren street, New York, died in Asheville, N. C., on Friday, April 10, at the age of 54. Mr. Sawyer handled specialties of foreign manufacture chiefly and was highly respected by all with whom he came in contact; his entire business career had been as a representative of foreign paper manufacturers.

During the World War, Mr. Sawyer was credited with brilliant service as a special agent of the State Department. He was for a time a member of the Treasury Department Secret Service where his work was said to have been of great importance, though of a nature still kept secret.

Offices of Russell McCandless, wood pulp importer and agent, and dealer in paper mill chemicals, have been moved from 521 Fifth avenue to Suite 915 in the New York Central Building, 230 Park avenue, New York.

Aaronson Brothers, paper dealers of 7 Greene street, New York, have opened a branch at 10 High street in Boston, Mass., with George H. Grauer in charge.

M. A. Buxton has been appointed New England sales manager for the Equitable Paper Bag Company, Inc., of Brooklyn, N. Y. He will make his headquarters in Boston, from which center he will cover the trade in the entire New England territory.



STOCK PUMPS

"that actually Cost less to run "that give Continuous Service "that are Guaranteed"

It is axiomatic that if you can reduce the cost of power in paper and pulp mills, you at once increase profits appreciably, since power expenditures are so large a proportion of your entire overhead.

Frederick stock pumps actually cost less to run, because they take less power.

Now, this is unusual in a pump as *rugged* as a Frederick—yet our list of users corroborates the truth of it—

Further, since they are rugged, Fredericks stay in service longer. Continuous service, then, at less cost, characterizes Frederick installations. To clinch that, we guarantee Frederick pumps when properly installed . . . These powerfully economical factors are not confined to the Stock Pumps alone—they apply to all Frederick pump installations on any drive. CONSULT OUR ENGINEERING DEPARTMENT, WITHOUT CHARGE, CONCERNING ANY OF YOUR PUMP PROBLEMS.

Send for New Bulletin!

FREDERICK PUMPS

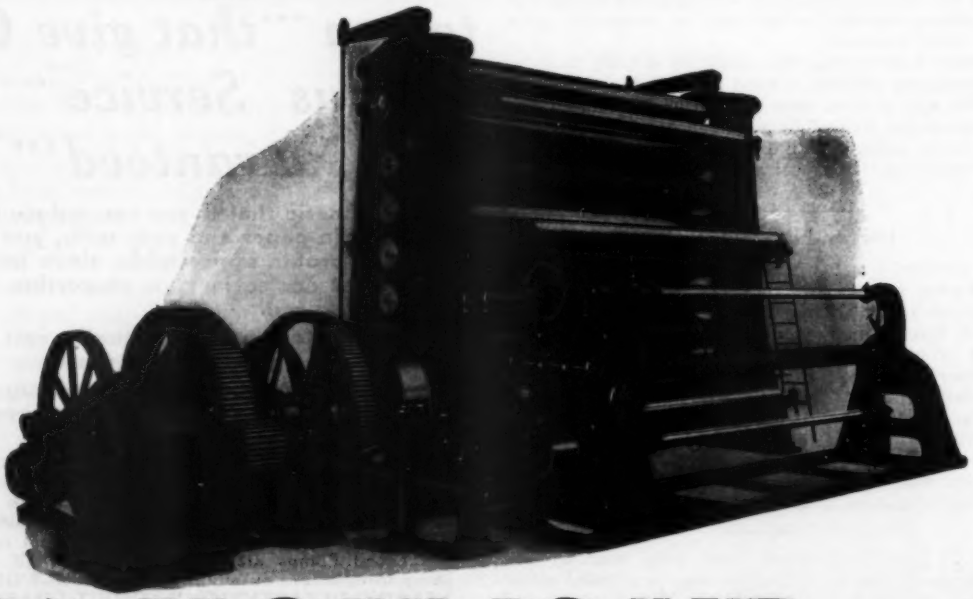
The Frederick Iron & Steel Co., Frederick, Maryland

HOLYOKE

SUPER CALENDERS *and* Experience

Experience does not come over night,—not in the designing and building of Super Calenders. It is the result of long years of intimate study of the daily dozens of difficulties to be overcome in the Paper Industry. For 65 years the HOLYOKE MACHINE COMPANY has built Quality and Superior Performance into every HOLYOKE MACHINE. When planning purchases of equipment consult with HOLYOKE Engineers, Holyoke Machine Co., Holyoke, Mass.

Manufacturers of Super Calenders, Platers, Cotton and Paper Rolls, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors.



The HOLYOKE MACHINE COMPANY

FOUNDED 1863

◆ NORTHERN NEW YORK ◆

St. Regis Reports Earnings

Reports of the St. Regis Paper Co. and subsidiaries for the year ended Dec. 31, 1930, shows net income, exclusive of $821,561 undistributed earnings of Niagara Hudson Power Corporation applicable to the company's holdings, of $4,257,521 after interest, depreciation, federal taxes, subsidiary preferred dividends, etc., equivalent after seven per cent preferred dividends, to 95 cents a share (par $10) on 4,122,464 shares of common stock outstanding at end of year, excluding 2,536 shares held in treasury. Including equity in undistributed earnings of Niagara Hudson Power Corporation, 1930 net income was equal to $1.15 a share on the common stock outstanding at end of year.

In 1929 the company reported net income, excluding undistributed earnings of Niagara Hudson Power Corporation applicable to the company's holdings, of $4,664,873, equal to $1.08 a share on 4,000,000 common shares outstanding at end of that year. Including equity in undistributed earnings of Niagara Hudson 1929 net income was equal to $1.30 a share on the common stock.

New orders which will keep the Coty Machine Co., Inc., of Watertown, manufacturers of paper bag machinery, running at full capacity into next fall and winter, and which will probably require expansion of the plant, have recently been received, according to T. Victor Coty, secretary and treasurer of the concern. The company is at present operating in one of the New York Air Brake Co. buildings in Watertown but more spacious quarters are rapidly becoming a necessity, Mr. Coty said. Just recently a pattern shop has been installed in the shop, and this, it is expected, will assist in speeding up production.

Claim Word "Parchment" Not Misleading

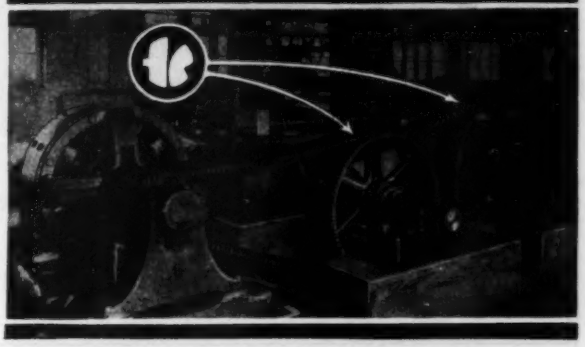
The Dexter Sulphite Pulp and Paper Co. has been requested by the Federal Trade Commission not to continue to describe its Ajax brand of paper as parchment. This paper is made of wood pulp and not from the skin of any animal but it is so processed that it has the appearance of parchment and for that reason the manufacturers have applied to it the term of parchment paper. The Federal Trade Commission contends that the product of the Dexter Co. is not parchment, that it is misleading to apply the name to this grade of paper and that in doing so the company is guilty of "unfair methods of competition and commerce."

Dr. James E. Campbell, president of the company, declares that there is nothing misleading about the application of the name parchment to his company's line of paper, and that paper merchants throughout the country are unanimous in their support of him in this view. Through general manager Jesse Neal, the American Paper and Pulp Association is making an effort to have the Federal Trade Commission withdraw its complaint on the ground that discontinuance of the term parchment to this grade of paper would result in much confusion among paper manufacturers, distributors, converters and consumers and serve no good purpose at all.

The net earnings on Taggart Corporation common stock for the year ending Dec. 31, 1930, were $704,075.51, equal to 83 cents a share, compared with $1,256,909.22, or $1.88 a share, in 1929, according to the annual report of the corporation. The consolidated balance sheet for 1930 shows total assets of $13,573,276.44 while the total capital stock and surplus are given as $9,747,843.79. In 1929 the total assets were $13,938,274.67 and the total capital stock and surplus was $9,977,519.98.

Charles W. Valentine, president of the Bagley & Sewall Co. of Watertown, has been granted a patent on papermaking machines and driving mechanism used in operating them.

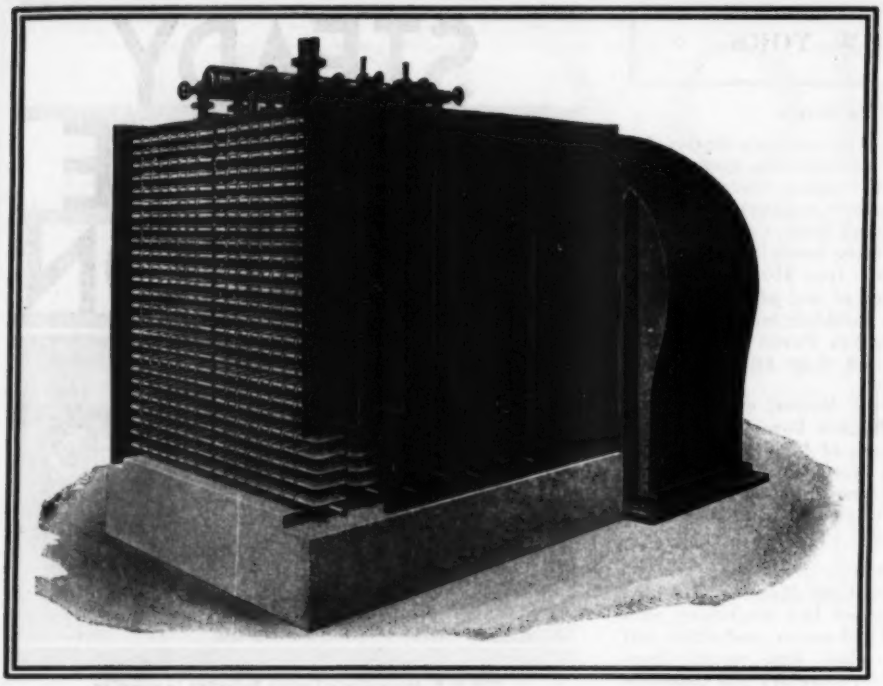
STEADY POSITIVE OPERATION



125 H. P. Morse Chain Double Reduction in reversing direction drive to sheet lead rolls, Raymond Lead Co.

Breakdowns, failures, and necessity for frequent adjustment of power transmission equipment have no place in today's production program. Morse Chains require little care. They are adaptable to extremely short centers. They can be easily lengthened or shortened to meet **your** specifications. They cannot slip. Service records of Morse Chain Drives show remarkably long life—free from production interruptions—under the most strenuous operating conditions. Users frequently say "Our Morse Drives require practically no attention except oiling." If you are looking for freedom from power drive troubles, use Morse. Our engineering department is at your service.

MORSE CHAIN CO. • ITHACA, N. Y.
Division of Borg-Warner Corporation
Branches in Principal Cities
Manufacturers of Morse Chain Drives
Flexible Couplings and Speed Reducers



Prevents Raw Water Going into Boiler Feed

Heat Machine Room with Dryer Condensate

AUTOMATIC STEAM CONTROLS

BLOWING THROUGH DRAINAGE SYSTEMS

COMPLETE LINE STEAM SPECIALTIES

Ask for Bulletin No. 22

The Stickle Vacuum Blast Coil Heater or Economizer has been designed to utilize the heat contained in the high temperature condensate from paper machine dryers, and at the same time to maintain a vacuum of 10 to 15 inches on the discharge line from the dryers.

This economizer will heat 1,000 cubic feet of air per minute for every ton of paper dried per day, and will return the condensate passing through it to boiler feed at a temperature as hot as it can be handled ordinarily with a pump without the admission of cooling water.

If you desire to make a direct saving of at least 15% in the steam required for drying the paper and for conditioning the air for heating and ventilating the machine room of your mill, write for details on this economizer. Complete plans will be furnished without charge.

Stickle Steam Specialties Co.

INDIANAPOLIS, IND.

❖ PACIFIC COAST ❖

WASHINGTON

Rainier Adjusts Stream Pollution Case

The plant of the Rainier Pulp & Paper Co., Shelton, which was closed for several months due to litigation concerned with stream pollution, opened for operations April 17, much to the relief of Shelton residents, who at one time feared the loss of this industry. With all claims and complaints adjusted, the company set to work to construct a three-mile pipe line to Goose Lake through which the waste liquor will be diverted instead of being dumped into Puget Sound.

The Rainier company is one of the largest tax payers in the county, the taxes for 1930 amounting to $34,450, and this fact together with the large employment offered in the 175-ton bleached sulphite plant was an urgent stimulus to Shelton residents to work for the retention of this industry. D. B. Davis, general manager of the plant, expects that 300 men will soon be on the pay-roll.

Ossian Anderson, president of the Puget Sound Pulp & Timber company, Everett, has been elected to membership on the board of trustees of the Manufacturers Association of Washington to fill a vacancy.

The plant of the Fibreboard Products Co. at Sumner, is again speeding up production after a lull during the winter.

One of the paper machines from the dismantled mill of the Crown-Willamette Paper Co., at Floriston, Cal., is to be moved to the Camas plant of the company, thus providing this huge mill with the 12th paper machine, the plan being to use this for glazed products.

The Grays Harbor Pulp & Paper Co., Hoquiam, is back on a 24-hour three-shift basis except for brief shutdowns for emergency purposes.

The Tissue Company, of Saugerties, N. Y., has leased property at Camas from the Crown-Willamette Co. and will make paper napkins and similar specialties, getting its raw paper material from the Crown-Zellerbach Co. on contract. Manufacture will start in a few weeks and the company will expand as the market seems to justify. The company is in no wise connected with the Crown-Willamette interests expect as a tenant on its property, officials state.

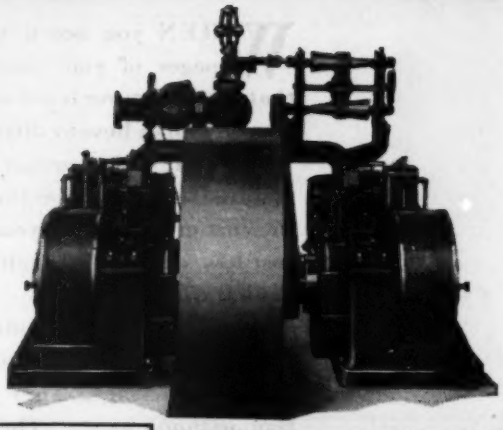
A. H. Lundberg, representative of the G. D. Jennsen Company in Seattle for the past four years, is now on the way to Sweden with his family, having sailed April 30. They will not return until early September. C. Skoldebrant of the New York office of the company is looking after things in Seattle during the absence of Mr. Lundberg.

The Zellerbach Paper Co. has opened a branch in Yakima at 113 North Second avenue with Warren Davis as manager.

The new plant of the Bates Valve Bag Co., which has been started in Seattle, will have a capacity of 150,000 bag units daily.

A barker and chipping plant is to be installed by the Schafer Lumber and Box Co., Aberdeen, in a building formerly occupied by the shingle plant of the company. It will be completed by July and will cost $50,000. The plan is to use hemlock bark refuse and sell the output to the Sulphite Wood & Paper Co. for pulp purposes. This latter company is a subsidiary of the Grays Harbor Pulp and Paper Co.

Don't Fuss with Uneven Engine Speeds



There is a type of Pickering Governor to fit any Steam Engine, Turbine or Oil Engine.

Varying speeds is a costly enemy in paper mills, when the quality of the product and production efficiency are both at stake. Uneven engine speed is too expensive to fuss with. Pickering engineers have made a study of accurate speed control in power plants of all kinds. This highly specialized service is available to you.

The Pickering principle of feather spring balancing solves at once the fundamental requirements of responsiveness and accurate speed control. The governor action is carefully adapted to the characteristics of the engine. Provision is made for connecting to variable speed drives.

Special engineering service is available to engine manufacturers and paper mills. Leading manufacturers have saved money through this service and improved their product at the same time.

Pickering Governor Co., Portland, Conn.

Established since 1862

PICKERING GOVERNORS

Business Paper Advertising ...Sign of an Efficient Manufacturer

WHEN you see a manufacturer's advertising in the pages of your business paper, you may know that *that* manufacturer is not only efficient in production, but that he also knows how to *distribute* effectively and economically.

And that is important to you as a purchaser of manufactured articles. For the cost of distribution enters into the cost of everything you buy. Efficiently distributed goods cost less, quality for quality, than goods distributed through haphazard methods.

Manufacturers who advertise in business papers use the shortest, directest, most economical way to reach you with a selling message. They are buying concentrated circulation *without waste*. They are applying advertising dollars wisely where those dollars will reduce other selling costs.

Through their selection of efficient means to advertise, they are giving proof that the products they offer to you bear the minimum cost of distribution—that those products, quality for quality, are lower in cost than products distributed either laboriously *without* advertising or carelessly with *wasteful* advertising.

ABP

THIS SYMBOL *identifies an ABP paper ... It stands for honest, known, paid circulation; straightforward business methods, and editorial standards that insure reader interest... These are the factors that make a valuable advertising medium.*

THE PAPER INDUSTRY
IS A MEMBER OF
THE ASSOCIATED BUSINESS PAPERS, INC.
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CALIFORNIA

Extensive Plans for Del Monte Convention

Foremost in the plans of paper interests at this time is the coming convention of the Pacific States Paper Trade association which will hold its 14th annual meeting at Hotel Del Monte, Del Monte, May 13, 14, 15 and 16. In connection with the convention the thirteenth annual golf tournament will be held, according to E. A. Doran, president of the association and A. Johnson the perpetual golf chairman for the organization.

The recently organized Pacific Coast Pulp and Paper Manufacturers association will hold a conference during the week of the convention to consider special problems in their division of the paper trade.

Arthur W. Towne, of Blake, Moffitt & Towne, lectured before the students of the Acadamie of Advertising Art, San Francisco, on April 17, and in the evening of the same day an industrial film entitled, A Trip Through the Oxford Paper Company Plant at Rumford, Me., was presented.

Chas. H. Beckwith, who recently transferred his office as coast representative of Carter, Rice & Co. from Seattle to San Francisco, has been made a member of the board of directors of his company. Mr. Beckwith first became associated with the firm at the home office in Boston a number of years ago.

The Sealright Company of the Pacific, western division of the Sealright Company, manufacturers of milk bottle tops and food containers, will build a factory in Los Angeles for the manufacture of paper milk bottle caps on which they hold a patent and they will also distribute other products made by the parent company. William L. Lee is general manager of the Pacific division.

Sterling Paper Box Co., Ltd., is to start manufacture of paper boxes and paper products at 746 Ceres Ave., Los Angeles.

California Paper House, Ltd., has recently been incorporated and has opened an establishment at 634 Third street, San Diego, although no statement has been made as to lines to be handled or regarding other policies of the concern whose members include, I. R. Heller, Los Angeles financier; Julian F. Weir and W. H. Clark, formerly paper sales representative in the district.

OREGON

Oregon Pulp & Paper Co., Salem, a subsidiary of the Columbia River Pulp & Paper Co., Vancouver, reports profit of $100,523 for 1930 after all charges except federal taxes. This compares with $233,493 in 1929 and $151,906 in 1928 after the same charges and before federal taxes. The balance sheet as of December 31, 1930, shows total assets of $5,130,757 at the end of 1929 and $5,042,444 at the end of 1928. Current assets amounted to $1,002,624 at the end of 1930 and current liabilities $616,176. The funded debt has been reduced $1,150,000 from $1,215,000 at the beginning of the year.

Harry Bigelow Coffin, manager of the advisory department of the Portland branch of the Zellerbach Paper Co., was general chairman of Achievement Week, May 4-9, an event in which advertising agencies and advertisers all participated in their respective localities for the advancement of the profession.

L. G. Gurnett of the Brown Paper company, who died in an auto accident April 15 at Portland, Me., had many old friends in this district who learned of this tragedy with deep regret, as Mr. Gurnett operated in the west in his early days

RADIAL BRICK
CHIMNEYS
Designed and Built
OLD
CHIMNEYS
Inspected and repaired while in operation—
also guaranteed.

Among our customers are some of the best known Railroads, Waterworks; and Coke, Steel, Machinery, Paper, Soap, Chemical and Glass Manufacturers.

Write for full information

A Repair Job

New Erection

The NORTHWESTERN CHIMNEY CONSTRUCTION CO.
FIDELITY BLDG. Cleveland, O.

Two Birds With One Stone

Lacing, Mechanically Correct: Each hammer-clinched steel tooth of Alligator Steel Belt Lacing holds its width of belt in a powerful compression grip like a clay vise.

ALLIGATOR
STEEL BELT LACING

THE great surplus of strength of this smooth hinged joint gives length and reliability of service, unexcelled, in any type of belt and practically any service.

The sectional steel hinge pin (patented) absorbs friction in the joint.

Belt End Protection Thrown In Sealing the belt end with the powerful compression grip prevents internal friction and ply separation at the joint. Alligator Steel Belt Lacing prevents belt end troubles and *increases the life of belting.*

Made also in Monel Metal.
Eleven sizes. Sold throughout the world.
FLEXIBLE STEEL LACING CO
4675 Lexington Street Chicago, U.S.A.

Note the Alligator Stamped on the Lacing and the Yellow Labeled Box for You: Guidance in Buying

WANTED—To manufacture and sell machinery for Paper Mills. Preferably patented and perfected. Prominent New England Manufacturer with complete manufacturing facilities and sales connections. Royalty basis preferred. Address Box 189, The Paper Industry.

WANTED—84 inch Hamblet Machine Co. Duplex Cutter with Layboy, ball bearing. Address Box 194, The Paper Industry.

WANTED—One 82 inch Cameron Rewinder, Type 14. Address Box 195, The Paper Industry.

WANTED—Board Salesman having experience selling both setup and folding boards, Eastern territory. State experience and salary expected. Address Box 197, The Paper Industry.

WANTED—Complete Kraft Pulp Mill, 30 to 50 tons production per 24 hours. Opportunity for idle mill with modern equipment. Send complete description, make of each machine, when built, lowest price, etc. San Rafael Paper Co., Box 469, Mexico City, Mexico.

FIDALGO PRODUCTS

NEWNAP FELT CONDITIONER—For Conditioning Press Felts. FIDALGO SHREDDER—For all Kinds of Pulp. STOCK CONSISTENCY REGULATOR—For All Kinds of Stock. PROMI MICROSCOPE—For Fibre Study in Laboratory. THE LEAHY CHIP SCREEN. WET MACHINES. BALING PRESSES.

Descriptive Bulletins and Catalog gladly mailed on request

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Roeper Electric Hoists

For lifting paper rolls, removing calender rolls or raising Fourdrinier wires, use ROEPER Type "R" Electric Hoists—With or without Trolleys—Speeds up to 40 feet per minute—Send for Bulletins.

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Member of Electric Hoist Manufacturers Association

ATTENTION!

Managers, Superintendents, Technologists

Increase Your Profits!

New bleaching process for Sulphite, Groundwood, Sulphate, Jute and Straw.

Also processes for—

De-Inking
De-Waxing
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Address all inquiries

Box 184 - - - The Paper Industry

Lessons in Paper Making

By Harry Williamson

One of the greatest funds of information on paper making ever published for the mill man.

Part I contains the first twelve lessons and two separate articles—A Problem in Head Box Control and The Degree of Hydration.

Part II contains fourteen lessons and one separate article—Safety Practice in Machine Room. Price 50¢ each.

Practical Helps for the Mill Man

A 48-page pamphlet made up of practical helps, many of which have meant considerable savings in paper and pulp mills. Of tremendous value to the practical man. Price 50c.

THE PAPER INDUSTRY

333 N. Michigan Ave. CHICAGO, ILL.

in the paper industry. His last visit here was two years ago. In 1888 he came to West Linn, Ore., and became manager of the plant known then as the Willamette Paper Co., where he remained until 1892. Following that, he built and operated a mill at Bridal Falls which was later sold to the Crown Columbia Co., which dismantled the plant and moved the equipment to Camas, Wash. Both of these plants formed the beginning of what are now Crown-Willamette plants.

E. R. Brown, engineer of the Crown-Willamette Paper Co., was elected president of the Oregon Industrial Safety Conference which met in annual session in Portland, April 11.

The Columbia Paper Products company, Portland, has been busy filling orders for blanket boxes used by the Pendleton Woolen Mills in packing large shipments of their woolen blankets which are distributed all over the country. From 12 to 15 tons of cardboard are sometimes used in one order.

Hawley Reports Gain

Hawley Pulp and Paper Co., Oregon City, in its annual report just issued to stockholders showed a gain in earnings during the year 1930 compared with the preceding year. The company was also able during the year to increase its earned surplus and improve its ratio of current assets to current liabilities.

The showing made by the company in a year of pronounced depression in the paper industry was considered exceptionally good.

Rufus C. Holman, president of the Pacific Coast Paper Box Manufacturers' association and also president of the Portland Paper Box company, was appointed treasurer of the state of Oregon by Governor Meier on May 1, to fill the vacancy caused by the sudden death of Thomas Kay who died while attending a meeting of the State Board of Control April 28.

Blake, Moffitt & Towne are now distributing Glacier Bond, a product of the Neenah Paper Co., Neenah, Wis.

Theodore F. Geissler, attorney of Portland, and for more than 20 years patent adviser for the Crown-Willamette Co., is among the late additions to Tappi.

❖ SOUTHERN ❖

Operations of all machines at the Brown Paper Mill, Monroe, La., has been suspended, it was stated by G. S. Holmes, manager. Mr. Holmes stated he hoped the plant would be able to resume operation in a few days. Activity at the plant is based on the number of advance orders. When sufficient material is on hand to fill the orders, production is curtailed. When new orders come in, operation is resumed at a rate sufficient to comply with the demand.

Bates Valve to Have Southern Plant

It is reported that the Bates Valve Bag Company, a subsidiary of the St. Regis Paper Company of New York, will erect a plant in New Orleans, La., at a cost of $200,000. Initial contact with the big company to obtain the industry for New Orleans was made in 1929 by Frank V. Dunham, industrial commissioner of the national advertising committee of the association, who conferred with officials of the St. Regis Paper Company in New York city. Actual work on the modern steel and concrete factory is expected to begin immediately and is scheduled to be completed around August 1, enabling manufacturers to start August 15.

The new factory will employ between 40 and 60 persons, and will manufacture Bates Valve bags. The plant will have

Tensional Strap Saves 20% on Shipments—

From 20 to 60%—from 50¢ to $5.00 per unit has been saved through the Signode Tensional Steel Strapping System. Containers are lightened, freight charges are reduced. Perhaps you can effect similar savings. Send for Signode Shipper or booklet "Guide to Better Packing & Shipping." Signode Steel Strapping Co., 2608 N. Western Ave., Chicago Ill., U. S. A. Offices in principal cities. Canadian Steel Strapping Co., Ltd., Montreal, Quebec.

SIGNODE

The **Sealed Tensional Strapping**

We also furnish round wire tensional reinforcements, all forms of nailed-on strapping, automatic wire tying machines, pail clasps, clutch nails, tag fasteners, etc. Write for general catalog.

The Marion Dolly Truck

— built to move paper EASILY

Stays put while being loaded from side or end — then rolls away like a ball, its load perfectly balanced.

Cradle models (low wheel and high wheel types) for handling rolls and bales. Flat top models for trucking cases, cartons and flat stock. Heavy frames of Marion Certified Malleable Iron. All wheels have tool steel roller bearings.

Seven sizes, sold on a money-back guarantee. — Write for circular.

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V. D. SIMONS

Industrial Engineer

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ELECTRIFICATION PAPER MILL PROPERTIES

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Consulting Engineers

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PAPER AND BOARD MILLS
MILL CONSTRUCTION

REPORTS
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CHEAPER POWER

HIGHER EFFICIENCIES and LOWER INVESTMENT

by advanced system of development of the power resources within your plant. Write us about your resources.
Satisfactory engineering services always guaranteed.
SPECIALISTS: High and Extreme pressure steam plants.

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CONSULTING ENGINEERS

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Consultation, reports, valuations, and complete designs and engineering supervision for the construction and equipment of

PULP AND PAPER MILLS
AND OTHER INDUSTRIAL PLANTS
STEAM AND HYDRO-ELECTRIC
POWER PLANTS
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1058 Ivanhoe Rd., Cleveland, Ohio

Specializing in

Power Plant Metering Equipment

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TURNS DIGESTER WASTES INTO PROFITS
CHEMIPULP PROCESS, INC., WATERTOWN, N. Y.

MARIS BROS. INC.

5530 GRAYS AVE., PHILADELPHIA.

CRANES
Electric
RELIABLE
& Hand
HOISTS

a capacity of approximately 12,000 tons of finished products annually and will be the only Southern plant of the company. Selection of New Orleans as the site of the plant was made because of the concentration and distribution facilities that it offers, according to Joseph Harmit, manager of the paper bag division of the St. Regis company.

Paper Makers Chemical Buys Southern Plant

Purchase of the Georgia-Louisiana Corporation's Marrero, La., plant by the Paper Makers' Chemical Corporation of Kalamazoo, Mich., is reported. It was said the new owners plan to expand the scope of its operations. The purchase price was not revealed. The plant has been used for the preparation of alum for water filtration purposes and for use in the manufacture of paper. The new owners, it was said, plan to add the manufacture of sal soda, soap powder and silicate of soda. Machinery estimated to cost about $20,000 is said to be already en route for this purpose and manufacture is expected to start about May 1.

Addition of soap powder manufacturing machinery, it is stated, will create a new local market for cottonseed oil, which will be purchased from mills in the immediate vicinity. It was decided to install facilities for making this product when it was found that soap powder is not now manufactured in this section of the country. No additional buildings will be erected to house the new manufacturing units, as room for expansion was provided for in previous building programs at the Marrero plant, which consists of a main building and four smaller structures erected at a cost of about $400,000. About 25 or 30 chemists are employed there.

The appointment of Cyril Ainsworth as assistant secretary of the American Standards Association has just been announced by Bancroft Gherardi, president of the association. Mr. Ainsworth, who has been in charge of ASA safety code work during the past year, succeeds F. J. Schlink, assistant secretary for the last eight years. Mr. Schlink recently resigned to give full time to the technical direction of Consumers' Research, Inc.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of The Paper Industry, published monthly at Chicago, Illinois, for April 1, 1931:

State of Illinois, County of Cook, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Edward B. Fritz, who, having been duly sworn according to law, deposes and says that he is the publisher of The Paper Industry and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Edward B. Fritz, 333 N. Michigan Ave., Chicago, Ill.; Editor, A. Scott Dowd, 333 N. Michigan Ave., Chicago, Ill.; Managing Editor, A. Scott Dowd, 333 N. Michigan Ave., Chicago, Ill.; Business Manager, Edward B. Fritz, 333 N. Michigan Ave., Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Edward B. Fritz, 333 N. Michigan Ave., Chicago, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is ..... (This information is required from daily publications only.)

EDWARD B. FRITZ.

(Signature of editor, publisher, business manager, or owner.)

Sworn to and subscribed before me this 21st day of March, 1931.
[SEAL] MARGUERITE FREYERMUTH, Notary Public.
(My commission expires Apr. 9, 1933.)

Pulpwood Award Lapses

The Forest Service, U. S. Department of Agriculture, announces that the conditional award made to the International Paper Company covering the purchase of pulpwood and other timber from two large tracts in the Rio Grande and San Juan National Forests, Colorado, has been allowed to lapse.

Under the conditions of sale, the company was required to meet certain stipulations and sign the formal timber sale agreement by April 1, 1931. These stipulations not having been met, the timber is now open to purchase at private sale at the highest price bid, by anyone who can meet the conditions of sale.

A recent issue of the **Industrial Bulletin** published by Arthur D. Little, Inc., Cambridge, Mass., makes mention of a new chemically-treated wallpaper, which has been made washable, tough and resistant to dust, finger prints, stains and pencil marks without losing any of the dull, soft attractiveness of ordinary wallpaper. In tests for wearing qualities, it was found possible to rub the new paper over 8,500 times with coarse cheese cloth, washing with soap and water every 350 rubs, before the surface showed signs of breakdown.

Sylvania Industrial Corporation, manufacturers of "Sylphrap", transparent cellulose paper, have started construction of a $1,000,000 addition to their plant at Fredericksburg, Va.

DAYTON HIGH SPEED BEATERS
The Dayton Beater & Hoist Co., Dayton, Ohio
Eastern Representative
MANSFIELD, BOLTON & KENT,
Western Representative
F. H. GODFREY

Water Tube Boilers for Every Service
BOILERS of high quality for central stations and industrial plants of all sizes, and for utilization of waste heat from kilns and furnaces. Steel construction only. Straight tube and bent tube types. Noted for long life and economy of operation.
Engineering service available—wire or write.
EDGE MOOR IRON COMPANY Edge Moor, Delaware
EDGE MOOR Water Tube BOILERS
STRAIGHT AND BENT TUBE TYPES—WATER WALLS—AIR PREHEATERS

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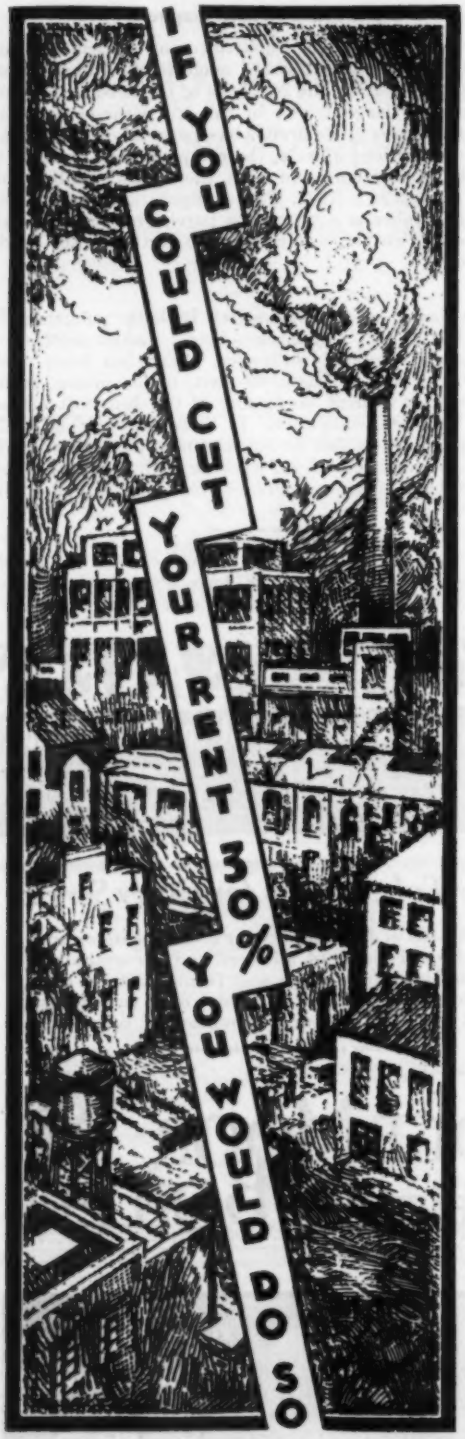
Rotary Digesters
Biggs Globe, Cylinder and Tumbling Digesters
Sulphate and Sulphite Digesters
Penstocks, Pipe Lines
Heavy Steel and Alloy Plate Work, Welded or Riveted
THE BIGGS BOILER WORKS COMPANY
AKRON, OHIO
Erecting Biggs Welded Digester
BIGGS DIGESTERS
Welded or Riveted
Biggs



You *CAN* Cut Your Sizing Cost 30%

TODAY, more than ever, production costs must be decreased. Keen competition demands lower manufacturing costs. And these results can be obtained with the Delthirna system.

Definite evidence of the superiority of the DELTHIRNA SIZING PROCESS is shown in its use by over 160 leading paper mills. These mills are cutting their sizing cost 30% and more. You too can effect these savings. Why not let us furnish you with more information? Write us today.

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MANSFIELD, BOLTON & KENT

CHEMICAL ENGINEERS

501 FIFTH AVENUE, NEW YORK

AMERICAN DELTHIRNA CORPORATION

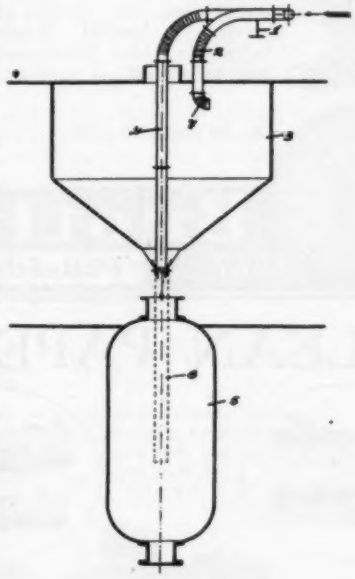
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Charging Pulp Cookers

THIS patent is concerned with a process by which the wood chips to be filled into a digester are forced out of the hopper by means of a current of air into the digester. The purpose of the patent is to improve the packing of the wood that is obtained in the digester through this manner of charging, in that the pipe, which carries the mixture of forced draft and chips, is carried through a hopper or container which is likewise filled with the wood chips. This is done in such a manner that a suction effect is caused to take place at the outlet of this pipe on the contents of the hopper. The result is that the wood chips are drawn up into the pipe, so that the chips are packed full in the digester in a very short period of time at a very small consumption of power.



The figure shows a device for carrying out the process. The chips, which are carried away from the chipper by means of a current of air, can be conducted by proper setting of the valve (1), either through the pipe (2) into the container (3), or through the pipe (4) directly into the digester (5). The tube (4) ends near the bottom opening of the container or hopper (3), so that the filling current flowing through the tube (4) likewise sucks the wood chips out of the container or hopper in the manner of an injector and thus fills them into the digester.

A telescopic tube (6) can be arranged in known manner at the bottom opening of the container (3), and this tube becomes shorter as the digester fills with the wood chips. After the charging operation has been completed, the wood chips are led only through the tube (2) by proper adjustment of the valve (1) for the purpose of filling the hopper or container. The adapter (7) at the end of the pipe (2) can be rotated, in order to fill the container with the wood chips. Max Weckwerth, German Patent No. 502,162.

Water Used in Pulp and Paper Mills

THE use of water in the manufacture of pulp and paper is considered from three standpoints: first, the ability of water to be converted into steam; second, its ability to dissolve substances, and third, its ability to cool hot solutions. The nature of the water that is used in the pulp and paper industry is also discussed with consideration of the effect of impurities in the water. Thus it is shown that the maximum allowable content of iron in such water is a tenth of a milligram per cubic meter and 0.05 milligram of manganese per cubic meter. The effect of the presence of magnesium salts is also pointed out in that it makes the paper easily tearable. Methods are outlined for filtering and purifying the water. Details are given regarding the precipitation of impurities by flocculation, the removal of acidity from water and also of iron. The article also contains a short bibliography. Dr. A. Splittgerber, Der Papierfabrikant, 1931, pages 81 to 84.

Magazine Grinders and Ordinary Grinders

THIS article is concerned with a thorough discussion of the operation and characteristics of magazine grinders and discontinuous grinders. The relations between the various conditions of operation and the production of the grinder are studied in considerable detail. The matter is discussed from the mathematical standpoint. Tables are given showing the characteristics of operation of grinders with various numbers of presses or magazines with consideration of the width of the grinding surface, the horsepower consumption, etc. A number of interesting curves are contained in the article.

Fig. 1 shows the manner in which the wood is pressed against the surface of the grindstone in the case of a pressure feed grinder of the discontinuous operating type. Fig. 2 shows the same condition in the case of a grinder wherein

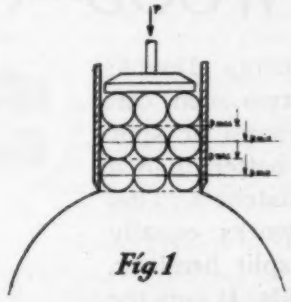


Fig. 1

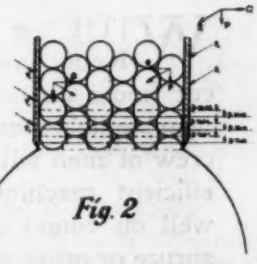


Fig. 2

the wood is continuously fed to the grindstone. The conditions that apply during the feed of the wood to the grinder in both cases are discussed in considerable detail in the original article.

The discussion had for its purpose the determination of the type of grinder that can best be used in the manufacture of mechanical wood pulp so that the greatest efficiency and economy can be secured. After a careful consideration of all the factors involved, it was concluded that the magazine or continuously operating type of grinder is the best. Dr. Walter Brecht and Erich Schaun. Wochenblatt fuer Papierfabrikation, 1931, pages 223-231.

Varying Lignin Content of Pinewood

THE investigation was concerned with the determination of the variation of the percentage content of lignin in pinewood in accordance with varying climatic conditions and the age of the wood. Methods for the determination of lignin in wood are first discussed. The selected method is described in working detail. A number of Swedish pinewoods were analyzed. The maximum difference in the lignin content was found to be one per cent. The conclusion is reached that

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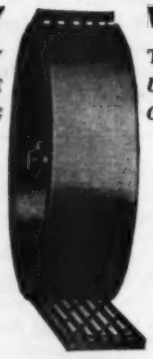

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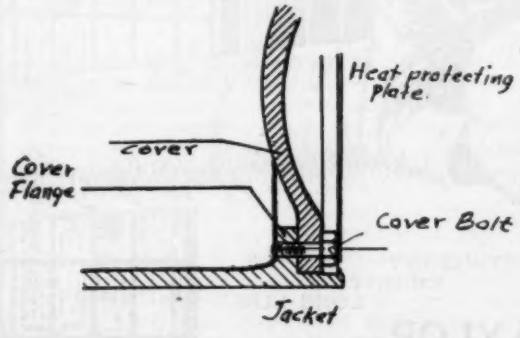
climatic conditions do not exert any noticeable influence on the lignin content of pinewood. The investigation on the variation of the lignin content with the age of the wood also revealed that the age of the wood did not have any influence on its lignin content. Peter Klason, Cellulosechemie, 1931, pages 36 to 37.

Drying Paperboard

THIS long article describes many different systems for drying paperboard or cardboard. Illustrations of the apparatus used are given as well as detailed descriptions. Figure 1, which accompanies this abstract, shows one of the more interesting of the drying systems used. This is a belt dryer, in which a belt carries the cardboard through the apparatus. The belt is made of fabric which is quite loosely woven, so that only as small as possible a surface area of the material, that is being dried, comes into contact with the drying air. Special attention is paid in this type of apparatus to the ventilation of the dryer so that the moisture vapors are removed. Means are also provided for regulating the temperature so that the conditions are proper for drying various types of paperboard, etc. B. Raab, Wochenblatt fuer Papierfabrikation, 1931, 120-122.

Effect of the Length of the Drying Cylinder on the Paper Web

THIS article is concerned with a practical discussion of the relation between the length of the drying cylinder and the properties of the paper web. It is pointed out that when the paper web leaves the paper machine, the edges of the web are not quite as dry as the middle of the web.



It must therefore follow that the drying cylinders have not functioned properly to dry the web throughout. This is due to the construction of the cylinders which leaves a length of 100 to 120 mm. on each side, which is lost as far as drying efficiency is concerned. The illustration shows such a cylinder. It is easy to see from it that there is a certain part of the surface of the cylinder which is not effective in drying the web. The effect of this condition is discussed in some detail. It is pointed out that the width of the cylinder is an important matter in the drying of the paper web on the paper machine and that care should be taken to select such a width that will afford most efficient drying. Wochenblatt fuer Papierfabrikation, 1931, page 306.

New Method for Determining Water in Paper and Cardboard

THIS new method for the determination of the water content of paper and paperboard or cardboard is characterized by being very rapid and is based on the use of carbide of lime as the active reagent.

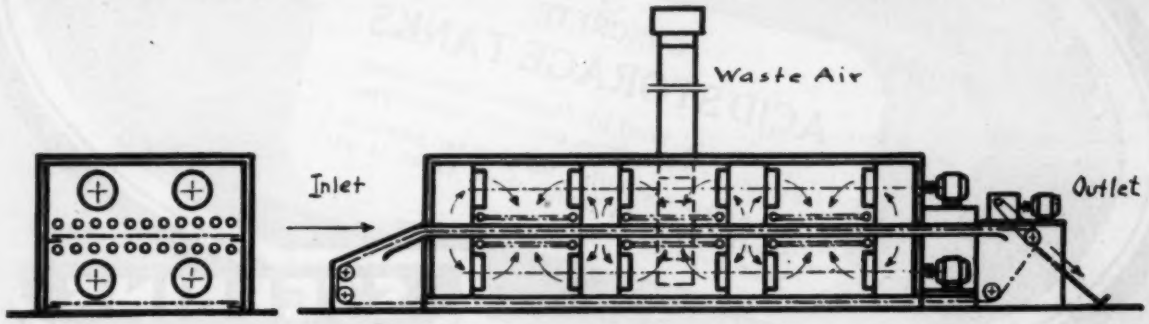
Thus a sample of paper, pulp, paperboard or the like is weighed out so that the weight is exactly one gram. This sample is then mixed with calcium carbide. Acetylene gas is developed, due to the water that is present in the sample, and this gas is collected in an apparatus which is connected with a mercury manometer. The pressure, which is produced by the acetylene gas and which is measured by the mercury manometer, is proportional to the quantity of moisture. An appreciable amount of water does not react with the carbide. This quantity appears, however, to be quite constant with various kinds of paper, etc. It can be concluded from the tabulated results, that the figures on the moisture content of the various products, that are examined by this method, do not vary in any appreciable degree from those that are obtained by the usual method of drying the sample in a drying oven. Whatever differences are found between the figures for one analysis and the other are no larger than the variations that are found to take place between the results of various check determinations carried out by the drying oven method, at a temperature of 105 deg. cent. The calcium carbide method is much quicker than the drying oven method and the results are accurate enough for the method to be applicable to ordinary control of practical operations. One important feature of the method is claimed to be the fact that almost the same results have been obtained in the analysis of the same sample under like conditions in different laboratories. Max Knopff, Wochenblatt fuer Papierfabrikation, 1931, page 178.

Rosin Process of Making Sulphite Pulp

THIS process is carried out on resinous woods. The article is first concerned with a discussion of the properties of such woods, the length of the fibers, the percentage of ash, etc. It has been proven possible to digest resinous wood, which contains up to four per cent of resinous matters, by the bisulphite method, but this treatment is inefficacious in the case of woods which contain a higher percentage of these impurities. It has been proposed to subject the wood to a preliminary extraction process in order to remove the rosin, etc. Among the methods suggested is treatment with an alkaline solution. The trouble with all these processes is that the cost of manufacture is unduly increased. They are all rather difficult to carry out from the technical standpoint.

Rosin has been able to get around these difficulties by neutralizing the resinic acids, which are contained in the wood, during the process of bisulphite digestion by the addition of a dilute solution of a salt of an alkaline earth metal. Practical tests have been made in Sweden with this process and the results were very satisfactory.

The process is carried out in the following manner. The wood chips are subjected to the action of a dilute solution of a salt of an alkaline earth metal for a period of two to five hours. The temperature is allowed to reach about 110 degrees C. Then the chips are washed with a saline water. These treatments may be repeated if necessary in certain



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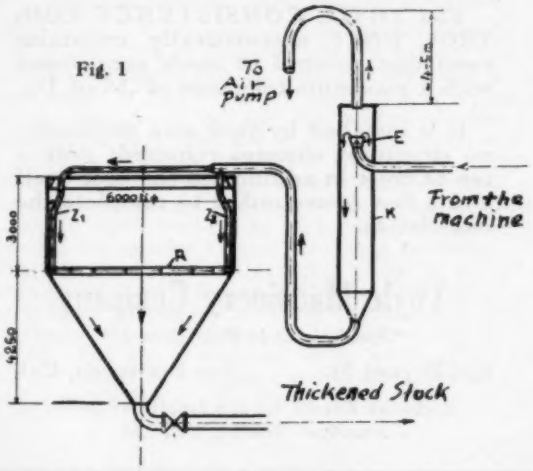
It is claimed that the pulp made by this process is very uniform in composition, very white and possess a high tensile strength. The results show that it is possible by this method to obtain a pulp, containing up to 92.4 per cent of alpha-cellulose, from wood which contains from seven to 16 per cent of resinous materials. This pulp can be bleached with two and one-half to four per cent of active chlorine. E. Meunier, La Papeterie, 1931, 214-218.

Settling Apparatus

THE illustration shows, what is claimed to be, a highly efficient settling apparatus or save-all. The dimensions of the important parts of the apparatus are shown. The

Fig. 1



save-all is made in the shape of a funnel and contains the pipe (R), which is made in the form of a ring and consists of two halves. Two pipes (Z_1) and (Z_2) lead the white water into the save-all, and connect with the ring-shaped pipe.

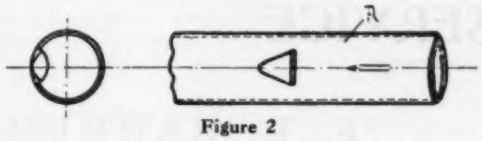


Figure 2

Care must be taken to see that the flow of white water in both halves of the annular pipe is uniform, so that a uniform circulatory movement of the contents of the funnel takes place when the white water is discharged from the pipe (R). The discharge of the water from the latter is accomplished through openings. The manner in which these openings are made is shown in figure 2.

The white water, which is fed to the save-all, first passes through a vessel (K) which serves to free it of air. The white water enters the vessel (K) through a funnel-shaped mouthpiece (E). The white water then flows down the vessel (K) and rises through a pipe until it reaches just above the top of the save-all. It is thus able to enter the pipe (R). A U-shaped tube is located on top of the vessel (K) and this tube makes connection with the exhauster. The shape and height of the tube are chosen so that froth does not reach the exhauster and disturb its operation.

Details are given on the operation of this apparatus, and the results that are obtained with it. Gebhard Schmidt, Wochenblatt fuer Papierfabrikation, 1931, pages 100 to 102.

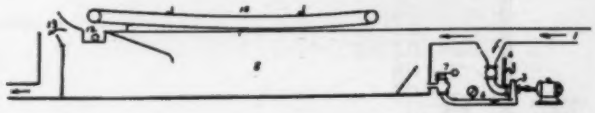
Purification of Chemical Pulp

THIS process is concerned with the purification of chemical pulp in order to obtain a high alpha-cellulose content product. The solid impurities in the pulp are first removed by spraying the latter with water at a speed of flow of 20 meters per second and then the pulp is subjected to chemical treatment, before which and also after which the pulp is washed. This has the effect of freeing the pulp of alkaline earths. The chemical treatment has the effect of removing accompanying substances from the alpha cellulose by making these substances soluble in cold caustic soda. Papeteries Navarre, Lyon, France. Austrian Patent No. 120,-864, filed August 15, 1930.

Back Water Treatment

THE small bubbles that adhere to the fibers in the funnel-shaped apparatus cause these fibers to rise to the surface. This makes the settling of the fibers a slow process and necessitates the use of large apparatus for accomplishing this purpose. A new type of save-all has been devised in which the solids are not caused to sink but to rise to the surface by making use of the very air which hinders settling. It is necessary that the air bubbles should be present in large numbers and of small dimensions, so that their lifting power should not be too great, for it is only under these conditions that they can attach themselves firmly to the particles of paper stock and carry them up.

Air must be introduced under pressure into the backwater in order to produce the fine air bubbles. It is possible to



regulate the amount of air absorbed by the water by controlling the pressure. When water that has been aerated under pressure is suddenly relieved from pressure, the air is liberated in the desired very fine state of division and the water assumes a milky appearance.

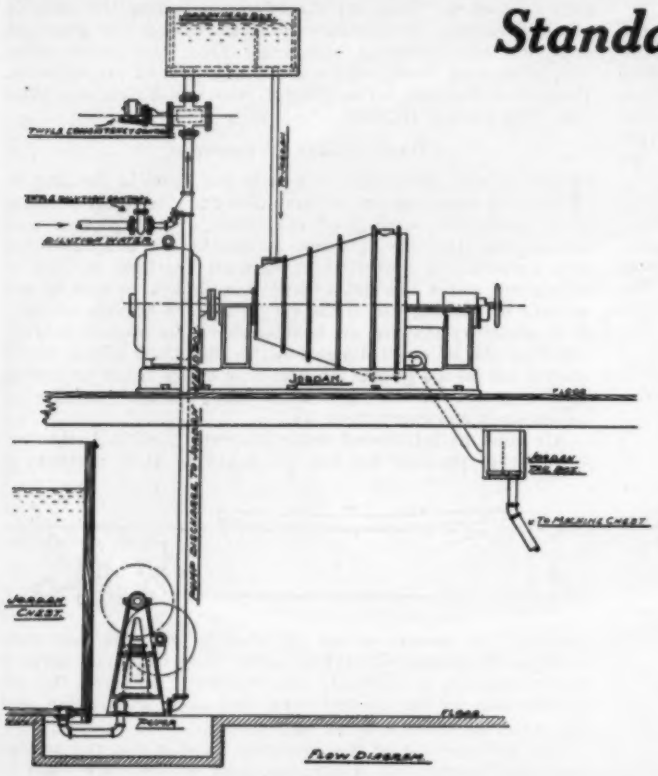
The arrangement of the apparatus is shown in the accompanying illustration. A constant part of the water that is to be treated in the apparatus is pumped through the centrifugal pump (3), which at the same time sucks a suitable quantity of air through the pipe (2). This mixture of air and water is under a pressure of two atmospheres in the pressure pipe (6), the pressure being fixed and held constant by means of the safety valve (7). On entering the tank (8) the water is freed from pressure and the finely divided air rises to the surface and carries all the solids with it, and not only from the water which has passed through the pump but from all the other water which has entered the tank by the chute (I). A slow working scraper (10) skims the surface of the clear underlying water and removes the fibers into the trough (12) and the clear water passes out through the overflow (13). N. Pedersen, The World's Paper Trade Journal, 1931, page 1150.

Reaction of Sulphite with Sugar and Lignin in the Sulphite Process

THIS article is concerned with a chemical discussion of the reaction that takes place between sulphite and sugar and lignin in the sulphite digestion. The mechanism of the process is examined. Experimental evidence has been found to substantiate the theory that the sulphonation of the lignin takes place in the solid phase and that the dissolving of the sulphonated product must be considered as a hydrolytic process, whose speed of reaction is dependent on the concentration of hydrogen ions in the solution and also on the temperature.

Sodium bisulphite pulp was used as the starting material in the experiments. The pH number was determined before and after heating the sample with solutions of phosphoric acid and potassium phosphate of varying acidity. It was demonstrated that a slight change in the acidity has a great effect on the speed with which the ligno-sulphonic acid, which is combined in the solid state, is dissolved.

Various other experiments were made with samples of sulphite pulp. They were subjected to the action of concentrated sodium hydroxide and also to solutions of sodium hydrosulphite. A detailed study was made of the mechanism of the latter reaction. The formation of a violet florescence



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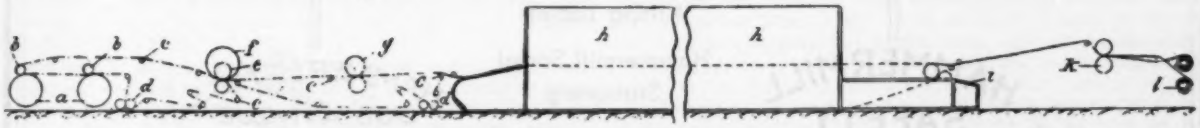
was noted in the experiment with sodium hydroxide. The experiment was also repeated with sodium acetate.

It was concluded that there is an oxide-reduction reaction between sugar bisulphite as donator and bisulphite ions or ligno-sulphonic acid as acceptor. The practical significance of this phenomenon is also examined. It is pointed out that the presence of an excess of bisulphite is of great significance for the quality of the pulp and its yield. Such an excess, however, has the effect of reducing the sugar yield to a very marked degree. This is a matter of concern to the manufacturer who uses the waste liquor for the manufacture of alcohol. The author indicates that it is essential to know how to control the cooking process so as to obtain the best results. Erik Haegglund, Der Papierfabrikant, year 1931, pages 161 to 163.

Improvement in Papermaking Machine

THE process, which is patented by Etablissements E. and M. Lamort Fils in French Patent No. 692,074, filed July 28, 1930, is concerned with the drying of the paper or cardboard web in a chamber in the presence of a drying gas, such, for example, as hot air. The product obtained is of uniform moisture content and of superior quality and a better product all around than that obtained by drying on cylinders. It is advisable to support the paper web on a suitable felt carrier as it passes through the drying chamber. A metallic wire screen can be used for this purpose. This apparatus can likewise be used for drying cardboard.

The apparatus in which this drying process is carried out is shown in the accompanying illustration. The felt is shown passing over the rollers (c) taking up the paper made on the cylinder wires (a). The felt also passes under the rollers (b). The web is subjected to the action of the press roller (e) in the case of paper and under the roller (f) in the case of cardboard. The drying chambers are shown at



(h) and while the paper is passing through the latter, it is supported on a metal cloth. The cardboard is collected on the table (i). A calender with two rolls is shown at (K) and the paper web, after passing through the same, is rolled up at (l).

Testing the Bursting Strength

THE methods, apparatus and results obtained in testing the mechanical-technical properties of paper and corrugated paperboard by means of the bursting strength testing instrument are discussed in this article. A number of papers and boards were experimented with, including papers made from straw stock, wrapping papers, etc. The various conditions that pertain to the testing process and that control it were studied both experimentally and also mathematically.

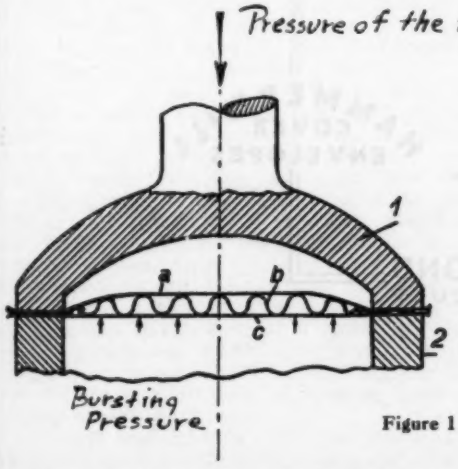


Figure 1

Fig. (1) shows the relation between the corrugations in the corrugated paperboard while in the testing machine. The manner in which the pressure acts upon the sample and the

Figure 2

relation between the corrugations and the strength of the board are given careful attention. The matter is studied in great detail and numerous charts and figures are given to show the manner in which the sample breaks, etc.

The conclusions that have been reached in that part of this very long article which deals with the testing of paper are quite interesting. No noticeable influence of the tension at the points where the paper sample was held fast in the instrument was present. The most effective size of sample is the one that affords a testing surface of 200 square centimeters. The bursting strength tester has been found to be a highly useful instrument for determining the mechanical properties of paper and also of cardboard. In the latter case it is necessary to use a large surface so as to avoid the effect of bending. Dr. Guenther Clemens, Der Papierfabrikant, 1931, number 7 and following.

Process and Apparatus for Drying Paperboard

THE apparatus is arranged in such a manner that the operation can be carried out at a high or low temperature. This is done by enclosing the press within a casing. The pressing operation is carried out in the usual manner with the use of filter cloth between the press plates. During the first stage of the process the external air within the casing is heated either by radiation or by electrical means. The addition of air under pressure brings the pressure up to between one and six atmospheres approximately. After the pressure in the press reaches 100 atmospheres, the air is removed from the casing and external air is sucked into the apparatus. The press is then gradually heated under atmospheric pressure and then subjected to a pressure of 150 atmospheres. During this part of the operation, the vacuum pump, which finally produces a vacuum within the housing of the apparatus, is operated for the purpose of aiding in the removal of water from the press. The pressing is repeated a number of times until a final pressure of 300 atmospheres is reached. Richard Kastner and Herbert Schmolka. Austrian Patent No. 120,690, filed March 8, 1928.

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THERE is no question that the market for paper is quiet for this period of the year, and, eliminating the seasonal aspect, from just about every other angle. Influences within the industry and without are contributing to the dullness existing. Without doubt, the situation in general outside of the paper manufacturing and merchandising industry is chiefly to blame, since it is commonly recognized by consumers and converters that prices of practically all classes of paper are cheap and that in all probability it would be advantageous to acquire supplies in the present market. However, manufacturing and trade conditions in general are such that users and converters of paper are hesitant about buying and are mostly holding off placing orders except for supplies which they are in urgent need of.

On behalf of paper manufacturers it should be said that they are, in a large majority of cases, doing what they can to sustain their market and to encourage buying by their customers. Price-cutting and selling pressure are to be observed in some branches of the industry, but this is not an ill common throughout the industry. Most paper manufacturers have learned through experience in recent months that they cannot force buyers to operate; that lower prices fail to incite any additional purchasing interest, and that sales pressure simply works around to react against themselves. Consequently, a majority are accepting market conditions as they exist, and are doing what they can to put their own houses in order to conform with the unfavorable business situation obtaining.

When will general trade activity expand, and with it create increased demand for paper, is the big question among paper manufacturers. Opinions on the subject differ widely. There appears to be at least a little upturn in certain branches of business. The textile industries are notably improved; the steel industry enjoyed something of a spurt for a time, and late reports tell of a broadening of the retail movement of merchandise, but these changes for the better have constituted merely "drops in the bucket" insofar as the broad expanse of business generally is concerned, and the reflection within the paper industry has been of scant consequence. Courage in business is still lacking. Every one, whether he be manufacturer, merchant or consumer, seems devoid of confidence in the outlook, afraid to buy unless absolutely driven to it by dire need, and the proverbial "vicious circle" continues to make for poor business in nearly all lines of trade. Under the circumstances, it could scarcely be expected that the paper industry can stage any concerted improvement while everything else is in so hesitant a condition.

Production of paper in the United States in February reached a total of 432,124 net tons of all grades, comparing with 455,691 tons produced by identical mills in January, according to the American Paper and Pulp Association. The daily average of the February output was seven per cent over the January production but was 16 per cent below the February, 1930, production. Shipments from mills in February aggregated 429,727 tons, against 449,748 tons in the preceding month, while stocks on hand at mills at the end of February totaled 294,455 tons, contrasted with 294,228 tons a month previously. Production of newsprint in February last was 88,788 tons; of uncoated book paper, 76,877 tons; of paperboard, 160,097 tons; of wrapping paper, 42,342 tons; of bag paper, 10,116 tons; of writing paper, 26,013 tons; of tissue, 6,140 tons; of hanging, 3,053 tons; and of building papers, 4,617 tons.

Newsprint production in the United States and Canada in March amounted to 287,595 tons, compared with 253,340 tons in the preceding month, and 320,813 tons in March last year, according to figures compiled by the News Print Service Bureau. Canadian output in March was 187,005 tons, against 164,552 tons in February this year and 207,485 tons in March last year, while United States mills produced 100,590 tons in March, contrasted with 88,788 tons in February and 113,328 tons in March a year ago. Total North American newsprint output in March was 312,693 tons, compared with 277,731 tons in the preceding month and 346,034 tons in the corresponding month last year. The output by United States and Canadian mills during the first three months of this year totaled 824,844 tons, against 953,594 tons in the similar period of 1930. Stocks of newsprint at Canadian mills at the end of March were 39,850 tons, compared with 42,259 tons in February '28, and 38,661 tons at the end of March a year ago. Stocks at United States mills were 32,254 tons, against 33,627 tons a month previously and 24,004 tons a year ago. Total stocks in the two countries were 72,104 tons, contrasted with 75,886 tons a month before and 62,665 tons at the end of March last year.

Mills in the United States produced a total of 205,785 net tons of paperboard in February, 1931, compared with 211,691 tons in the preceding month and 220,014 tons in February last year, according to the monthly statistical summary compiled by the U. S. Department of Commerce. Production in February was at 67.2 per cent of the mills' capacity, against 63.8 per cent in the preceding month and 71.8 per cent in February, 1930. Shipments of board from mills during February were 203,202 tons, contrasted with 209,660 tons in the preceding month, and stocks on hand at mills at the end of February aggregated 77,065 tons, against 74,482 tons a month previously. New orders for board received by manufacturers in February called for 198,296 tons, compared with 211,782 tons in January, and unfilled orders held at the end of February were for 50,838 tons, against 55,744 tons at the end of the preceding month.

Canadian mills have cut the price of newsprint $5 a ton, effective May 1. The new contract basis on standard newsprint is $50 a ton at mills, or $57 per ton delivered in New York City, as compared with former prices of $55 mill and $62 delivered New York. Retroactive from January 1 to April 1 this year, a reduction of $3 a ton is to be made. The announcement of the reduction was made by the so-called Institute groups, or those mills belonging to the Newsprint Institute in Canada. Other companies have followed the cut, though certain large producing organizations, including the International Paper Company, have not yet revised their prices, but are expected to fall in line. The newsprint cut was not unexpected, as there had been rumors in the market of impending action. Now the fear is expressed within trade circles that a price war will ensue.

Writing papers are in fair demand, although most orders continue to call for small lots. Prices are quotably maintained on most lines of fine papers. Wrapping paper is in moderately good movement, and holding its own in price. Hope is expressed in various corners of the trade that the establishment of the new Kraft Institute will effect a further stabilization of the kraft paper market. Book papers are in routine demand, mostly on contract, while tissue is favored with little else than subnormal market activity. Boxboards are in fair call but prices are uncertain and tending to ease, with different manufacturers granting price concessions off and on.

Milton L. Smith, who for the past ten years has been connected with the News Print Service Bureau, New York, first in a statistical capacity and later as cost accountant, left New York in April to take over his duties in connection with a new position to which he has been appointed with the U. S. Indian Service at the Klamath Agency in Oregon.

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Papermaking Rags

While there are reports from the trade telling of low stocks and small incoming supplies of certain grades, indications point to paper manufacturers experiencing little or no trouble getting all the rags of almost any description they need. In fact, the market situation as a whole is decidedly in favor of those on the buying side. It is probably true that collections of mixed rags all over the country have diminished, owing to the low prices prevailing, and also true that production of new cuttings is not commencing to equal normal, yet demand from consuming quarters is at such a low ebb that ample supplies exist, and only in the rarest of instances are buyers occasioned any difficulty in locating all the rags of almost any kind which they want.

However, it would appear as if the market is remarkably devoid of selling pressure. Dealers and packers are, of course, eager for business, but apparently they are not trying to improve matters by promiscuously offering out rags at any old price that can be obtained. It would seem as if they have come to a conclusion that exerting sales pressure will avail them nothing, because few or no paper manufacturers are purchasing rags today unless having urgent need of supplies, and dealers therefore are, in most cases at any rate, waiting out the market in the hope that the time is not far off when paper mills will be favored with larger business in their product and find it necessary to expand their buying operations in the rag market. On the other hand, it is no secret that buyers are finding some supplies of certain classes of rags available at further recessions in price; which is to say that if they resort to "shopping about" the market, as they are doing, they succeed in getting the rags desired at additional price reductions.

New cotton cuttings of most grades are moving only in piecemeal fashion to paper mills, and it is observed that the bulk of the limited demand is for the so-called specialty cuttings. No. 1 new white shirt cuttings are reported available at 7.25 cents a pound f.o.b dealers' shipping points and perhaps at slightly less, while fancy shirt cuttings are on a price level of 3.25 cents, No. 1 washables are offered at 3 to 3.25 cents, unbleached muslins at 7.25 to 7.50 cents, and blue overall cuttings at 5 cents. Khaki cuttings, pink corset cuttings and corduroy cuttings are moving relatively well, and prices of these grades are a bit steadier than in the bulkier descriptions. New linen cuttings are practically unsalable, it is reported, and prices of these rags are strictly a nominal matter.

In old rags, demand for domestic roofing stock is the feature. Roofing felt mills have absorbed supplies in a fairly consistent manner and in moderately good volume of late, and have granted steady prices, yet they have flatly refused to pay any advanced figures while apparently getting all the supply wanted at the rates which have been prevailing for some time. No. 1 domestic roofing or cloth strippings are selling at around 90 cents per hundred pounds and No. 2 stock at 65 to 70 cents f.o.b shipping points. Old white rags are in spotty demand but are adhering to fairly steady price levels, while thirds and blues have moved slightly lower in value to where purchases by paper mills have been reported at 1.35 cents a pound for repacked blues, and 90 cents a hundred for rough blues.

The market for imported rags of virtually all grades is in the doldrums, with business of any importance almost nonexistant and with market prices very uncertain. Dealers themselves frankly report they do not know what such rags are worth, or what can be obtained for them in sales, since so few paper mills are manifesting interest.

Average quotations f.o.b. shipping points and ex dock New York, some of which should be considered as strictly nominal, are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	7.00– 7.50
White shirt cuttings, No. 2	4.50– 5.00
Fancy shirt cuttings	3.25– 3.50
Washables, No. 1	3.00– 3.25
Unbleached muslins	7.25– 7.50
White lawns	6.00– 6.25
Overall cuttings, blue	5.00– 5.25
Black silesias	3.00– 3.25
Canton flannels, bleached	6.25– 6.50
Canton flannels, unbleached	5.25– 5.50
Shoe cuttings, bleached	5.50– 5.75
Shoe cuttings, unbleached	4.50– 4.75
Light silesias	5.00– 5.25
O. D. khaki cuttings	4.50– 4.75
Mixed khaki cuttings	3.75– 4.00
Corduroy cuttings	3.00– 3.25
Cottonade cuttings	2.75– 3.00
Linens, No. 1 white, foreign	9.00– 9.50
Light prints, foreign	2.50– 2.75
Old Stock—	
Whites, No. 1, repacked	4.25– 5.00
Whites, No. 2, repacked	2.00– 2.50
Whites, house soiled	2.00– 2.25
Whites, street soiled	1.75– 2.00
Thirds and blues, rough	.90– 1.10
Thirds and blues, repacked	1.35– 1.65
Lace curtains	3.50– 3.75
Black stockings	3.00– 3.25
Cotton canvas, No. 1	3.50– 3.75
White cotton batting	1.15– 1.35
Roofing, No. 1 (cloth strippings)	.85– .95
Roofing, No. 2	.65– .75
Linsey garments, foreign	.95– 1.00
Dark colored cottons, foreign	.75– .80
Blue linens, foreign	2.75– 3.00
Gray linens, foreign	3.00– 3.25
White linens, foreign	5.00– 5.50
Light prints, extra foreign	1.75– 2.00

Rope and Bagging

Most papermaking raw materials are in a quiet market position but it is doubtful whether any kind of raw stock consumed by paper mills is quite as dull as old rope. This article is very nearly completely neglected by consumers, and even though it is asserted that available supplies are limited and that dealers in numerous cases have stopped collecting and buying old rope, the market is nevertheless topheavy with supplies for which there seems to be no sales outlet whatever. Prices are nominal at approximately 2.25 cents a pound f.o.b. shipping points for No. 1 domestic old manila rope, and about this same level for foreign old rope, yet it is probable purchases are being effected at cheaper figures. Strings and off-grades of old rope also are in very slow demand and irregular and uncertain in price.

Small-lot buying of scrap bagging by paper mills has been recorded, and prices of both No. 1 scrap and roofing bagging are holding their own at around 1.35 cents a pound for the former grade and 65 cents per hundred pounds for the latter. Signs are that not much bagging is reaching the market, and this is a factor lending support to ruling values.

F.o.b. shipping point and ex dock New York quotations follow:

It Pays to Remember this Shield of Standard Purity

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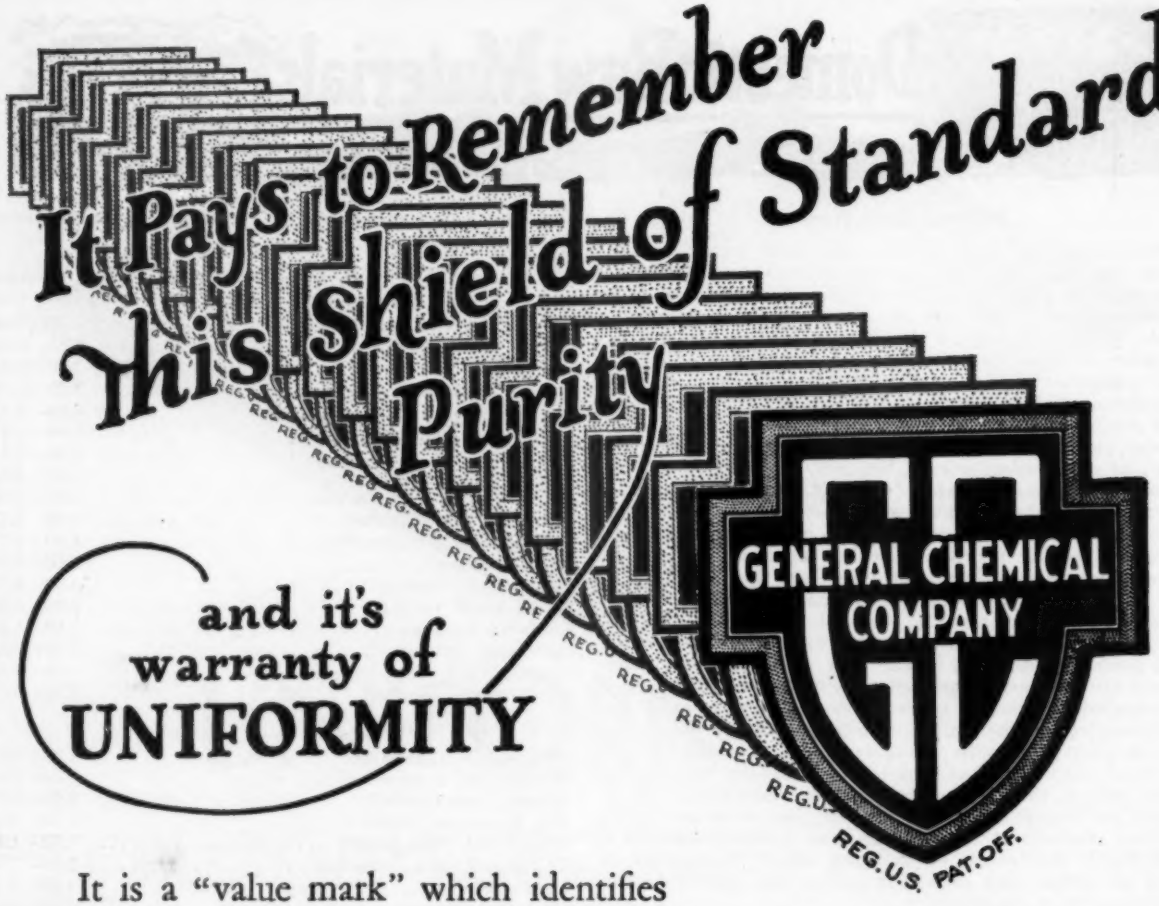

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Gunny, No. 1 domestic	1.60– 1.70
Gunny, No. 1 foreign	1.60– 1.65
Scrap bagging, No. 1	1.30– 1.40
Roofing bagging	.60– .70
Wool tares, heavy	1.65– 1.75
Wool tares, light	1.55– 1.65
Manila rope, No. 1 foreign	2.25– 2.50
Manila rope, No. 1 domestic	2.25– 2.50
Sisal strings	1.50– 1.75
Mixed strings	.70– .80

Old Paper

Not much change of consequence has occurred in old paper prices, and the market remains in a condition most unsatisfactory from the point of vantage of the collector or dealer. Yet the situation has developed a little improvement in some quarters during the last few weeks; at any rate, demand for certain grades has increased a bit, and dealers have been successful in getting slightly higher prices from mills. There is an unusually wide spread in market rates at present, reflecting the attitude of sellers in different parts of the country, and circumstances which are existing in the various large producing centers.

Mixed paper has moved in somewhat better tonnage on a price range of about 15 or 17½ cents per hundred pounds in the East to up around 35 cents in the Middle West f.o.b shipping points. Folded news is available in the East at as low as 25 cents a hundred f.o.b. New York, while in the West 45 cents and higher is quoted. White shavings have eased a little in value in some cases, whereas old kraft paper has moved freely on a steady price basis of around 1.15 cents per pound at dealers' points, and heavy book stock is maintained quotably at 75 to 90 cents a hundred pounds, depending on the packing and the point of shipment.

The following quotations f.o.b. shipping points are largely nominal:

	New York and Chicago
Hard white shavings, No. 1	2.30– 2.80
Hard white shavings, No. 2	2.15– 2.40
Soft white shavings	2.00– 2.35
Colored shavings	.50– .60
Heavy book, No. 1	.75– .90
Crumpled book, No. 1	.60– .65
Ledger stock	.65– 1.00
Kraft No. 1	1.05– 1.20
New kraft cuttings	1.50– 1.75
White blank news	1.60– 1.75
Manilas, No. 1	.40– .60
Manilas, container	.20– .30
Folded news	.25– .45
Sulphite mill wrappings	.50– .60
Old corrugated boxes	.35– .45
New corrugated box cuttings	.40– .50
Mixed paper, No. 1	.15– .35
Common paper	(Nominal)

Pulpwood

With the wood pulp market quiet, and with most pulp manufacturers having covered their bulk requirements in raw material for a time, not much is stirring in the pulpwood market. A steady movement of supplies against contracts is reported, but there is limited current demand. Prices as quoted are adhering to about previous levels though the undertone is anything but firm.

Mechanical Pulp

In the Spring of the year pulp grinders are provided with plenty of water in mill streams and are enabled to operate their plants at as large capacity as they care to, or as is warranted by market conditions, and with the market plentifully supplied with groundwood, prices usually move downward. This Spring has been no exception to this usual rule, and market quotations on groundwood are lower. Reports tell of Canadian producers accepting $23 a ton f.o.b. pulp mills for prime spruce groundwood, and it is not improbable that purchases have been made under this price. Domestic grinders are asking in the vicinity of $26 or $27 at shipping

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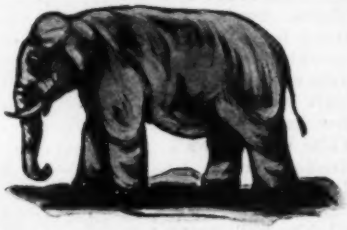

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points, though prices depend in large measure on the haul to consuming centers and the air dry test. Demand is slow, and the market is decidedly in buyers' favor.

Production of mechanical pulp in the United States in February amounted to 63,236 net tons, compared with 70,254 tons in the preceding month, according to identical mill reports to the American Paper and Pulp Association. Producing mills used 61,514 tons and shipped out 1,539 tons during February, leaving stocks on hand at the end of that month of 47,779 tons, contrasted with 47,770 tons at the end of January.

Chemical Pulp

While domestic pulp manufacturers are managing to keep fairly occupied producing pulp for their own use, and some for outside sale, it is generally acknowledged that the market is quiet and that sales to transient buyers are at best of small volume or importance. Sellers in certain instances are pressing for sales, and prices obviously are suffering as a result. It is stated that Pacific coast bleached sulphite of prime grade is available at 2.60 cents a pound ex dock American Atlantic seaboard, and there have been reports of purchases of such pulp at well under this price level. On the other hand, unbleached sulphite is relatively steady quotably at around 2.50 cents a pound for No. 1 book grade f.o.b. pulp mills, and 2.25 cents upwards for news grade. Domestic kraft pulp is something of an unknown quantity, with producers of high-grade kraft said to be holding quite steady for maintained prices and yet with purchases of some kraft pulps reported at surprisingly low figures. Arriving at any price level is little else than guesswork.

Mills in the United States produced a total of 106,651 net tons of chemical pulp in February, against 108,450 tons in January, and had stocks on hand aggregating 23,212 tons at the end of February, compared with 24,929 tons a month previously, according to American Paper and Pulp Association statistics.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	2.60– 4.75
Easy bleaching sulphite	2.40– 2.65
Unbleached sulphite, No. 1 strong (news grade)	2.25– 2.50
Unbleached sulphite, No. 1 book	2.40– 2.65
Soda pulp bleached (delivered)	3.00– 3.25
Mitscherlich, unbleached	2.75– 3.00
Kraft, No. 1	1.80– 2.75
Screenings, refined	(Nominal)

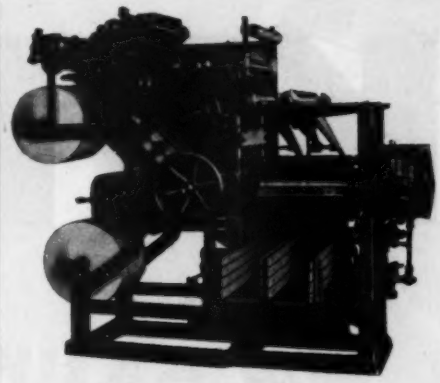
Chemicals

Not much change is noted in quotations of papermaking chemicals but the few revisions reported are mostly in a downward direction. Casein is slightly lower, domestic standard ground casein being available at 8 cents per pound, finely ground at 9 cents, and the imported product at 9.50 to 10 cents, duty paid. Quoted prices of caustic soda and soda ash adhere to previous levels, and papermakers' starch continues offered at 2.67 cents a pound in bags at works.

Average quotations are as follows:

Alum, lump ammonia	3.50 – 3.75
Alum, lump starch	3.75 – 4.00
Blanc fixe, powdered	3.75 – 4.00
Bleaching powder	2.00 – 2.35
Brimstone (long ton, at mine)	18.00 –20.00
Casein (duty paid)	8.00 –10.00
Caustic soda, solid, spot delivery	2.50 – 2.55
China clay, domestic washed	7.00 –11.00
China clay, foreign	13.00 –21.00
Rosin, Grade E.	5.95 – 6.25
Satin white	2.00 – 2.25
Soda ash, 58 per cent light (bags)	1.15½– 1.25
Starch, papermakers', in bags	2.67 –
Talc (ton)	16.00 –18.00

The Cauthorne Paper Co. of Richmond, Va., has been appointed an agent in that city and vicinity for Greylock Bond, the 75 per cent white rag paper manufactured by the L. L. Brown Paper Company, Adams, Mass.



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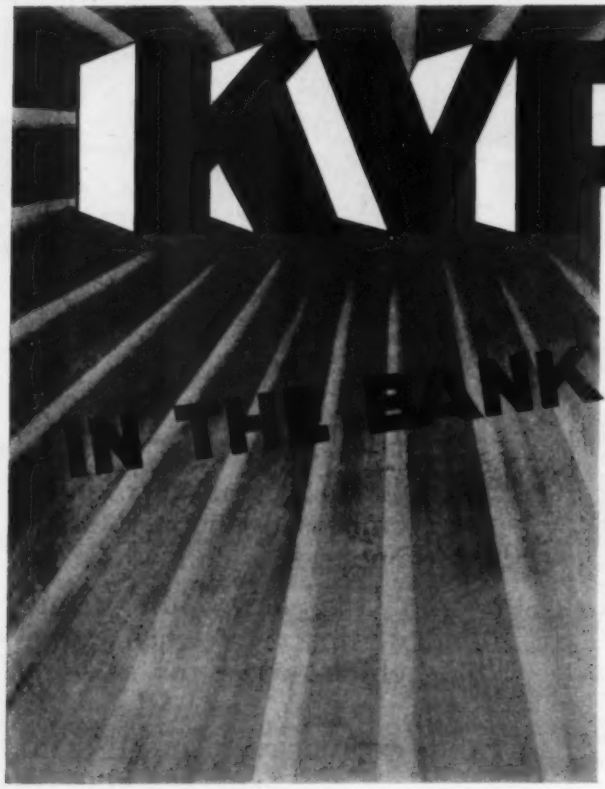

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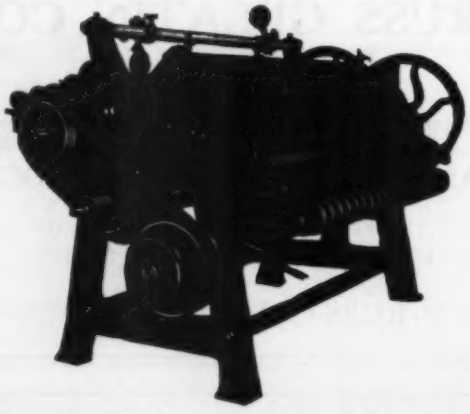

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New Papers

Writing—	
White rag	16–40
White sulphite	7–30
Colored rag	15–40
Colored sulphite	7–30
Ledger—	
White rag	16–40
White sulphite	10–30
Colored sulphite	10–30
Colored rag	15–40
Bond—	
White rag	16–40
White sulphite	7–30
Colored sulphite	7–30
Colored rag	15–40
Book—	
No. 1 S. & S. C.	5.50– 8.00
Machine finished	5.25– 8.00
English finish	5.25– 8.00
Coated and enameled	7.00–11.00
Lithograph, M. F.	7.50–12.00
Newsprint—	
Rolls, contract, per ton, delivered New York	57.00–
Rolls, transient, per ton, delivered New York	57.00–
Sheets, per ton, delivered New York	62.00–
Sideruns, per ton, delivered New York	44.00–47.00
Cover Stock—	
Coated, both sides	–10.25
Coated, one side	–10.15
Tissue—	
No. 1 white, 20x30	.70– .80
No. 2 white, 40x36	.65– .75
No. 1 Manila, 24x36	.65– .75
Kraft	.85– .90
Wrapping—	
No. 1 kraft	4.50– 5.25
No. 2 kraft	3.25– 3.75
Southern kraft	3.25– 3.75

Boards—	New York and Chicago
Solid news	35.00–40.00
Straw	40.00–45.00
Plain chip	30.00–32.50
White coated chip	47.50–50.00
Manila coated chip	42.50–45.00
Binders' board	65.00–70.00

Container Corp. Reports Strong Financial Position

Net earnings of the Container Corporation of America for the three months ended March 31, 1931, after all charges including interest, but before depreciation, were $82,068. After deduction of depreciation charges totaling $206,586, a net loss of $124,518 was shown for the quarter.

In the corresponding quarter of 1930, net earnings after interest and charges, but before depreciation and taxes, were $361,030, with a net profit of $133,866 after deduction of depreciation charges of $208,910 and federal taxes of $18,254.

Current financial position of Container Corporation remains strong, the March 31, 1931 consolidated balance sheet showing a working capital ratio of three to one. Net working capital has shown a slight increase since the close of 1930.

Changes in Pulp Bleaching Corporation

Following the resignation of R. B. Wolf to become manager of the Pulp Division of Weyerhaeuser Timber Company, Raymond P. Hill has been elected president of Pulp Bleaching Corporation, New York City. Mr. Hill is also president of Pulp Bleaching Limited, Montreal, Canada, and is secretary and treasurer of International Bleaching Corporation of Delaware.

Mr. Hill came to the pulp and paper field 18 years ago from the electrical industry, served as chief engineer in a number of well-known mills, and became a partner of R. B. Wolf in 1923. He has been vice-president and manager of Pulp Bleaching Corporation since its organization in 1925. Five years ago he organized International Bleaching Corporation, which effected a consolidation of the patents and interests of Wolf, Fletcher, Stebbins Engineering & Mfg. Co., Collins, Moore & White Company, and others in the pulp bleaching field.

Raymond S. Hatch succeeds Mr. Hill as vice-president of Pulp Bleaching Corporation. He is also vice-president of Pulp Bleaching Limited and technical director of International Bleaching Corporation.

Mr. Hatch entered the paper industry 20 years ago from a previous broad experience in the field of organic chemistry. He has served the industry as chief chemist, production manager and mill owner; was one of the pioneer members of T.A.P.P.I. and its president for two years. He joined Wolf & Hill in 1928.

James F. Smith who has been with Wolf & Hill for many years becomes secretary-treasurer of both the American and Canadian companies.

R. B. Wolf remains president of International Bleaching Corporation, this being a purely research institution, which has no commercial dealings with the trade in North America.

Conference on Forestry Announced

A reforestation conference will be held May 15 and 16 at the Charles Lathrop Pack Demonstration Forest under the auspices of the New York State College of Forestry at Syracuse University. Prominent speakers will address the conference at a dinner to be served at the new Adirondack hotel in Warrensburg on the evening of the 15th.

According to an announcement by Dean Hugh P. Baker of the Forestry College, Dr. Joseph S. Illick of the Department of Silviculture, former state forester for Pennsylvania and Clifford Foster, Director of the Pack Forest, will prepare and conduct the program.

Forest protection of watersheds, cover for wild life and recreation as well as wood supply for the industries of the State are urgent matters. The importance of the dissemination of information by practical demonstration regarding reforestation is vital at this time because of the state-wide Hewitt program now under way which involves the reforestation of more land than was ever embraced in a single project by a state and the stimulating affect this is having upon planting by individuals and counties.

A trip is planned through the Pack Forest giving special attention to the plantations and reforestation projects on the area. A special feature will be a demonstration of planting by the senior class of the State Forestry College in silviculture and management which, at that time, will be receiving instruction at the Pack Forest. Cities along the Montreal route from Albany to Plattsburg will be represented at the meeting. Boards of supervisors, many of whom are interested in county projects, together with the chambers of commerce of various cities have signified their intention of being represented at the Conference.

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EXPORTS

Exportations of paper and paper products showed a further decrease in point of total value during the month of February, 1931, when exports reached an aggregate value of $1,809,857, compared with export shipments valued at $2,050,612 in the preceding month, and $2,617,226 in the corresponding month last year, according to official statistics compiled and issued by the U. S. Department of Commerce in Washington. Exports of paper from the United States in the first two months of the current year were valued at $3,860,469, registering a considerable decline as compared with $5,761,761 in the similar period of 1930.

Exports of newsprint paper in February amounted to 1,796,199 pounds, valued at $59,942, against 1,391,441 pounds of a value of $49,474 in January last, and 2,330,411 pounds of a value of $91,120 in February a year ago. Book paper exports in February reached a value of $75,183, compared with shipments of a value of $108,203 in the preceding month, and $134,873 in the same month last year. Writing paper exports also recorded a decrease, amounting in value to $106,103 in February, contrasted with $121,277 in January this year and $177,093 in February, 1930. Exports of wrapping paper totaled in value $141,736 in February, against $168,758 in the preceding month and $249,785 in the similar month last year. Tissue paper exports in February were valued at $51,319, against $88,498 in the corresponding month of 1930.

Exports of boxboard from the United States in February attained a value of $105,596, compared with $88,864 in the preceding month and $106,244 in the corresponding month a year ago, while other paperboard shipments were valued at $105,160, contrasted with $106,604 in January last and $174,825 in February, 1930. Paper bag exports in February were of a declared value of $56,720, against $68,304 in the same month last year, and exports of paper boxes and cartons amounted in value to $76,260, compared with $107,940 in the similar month last year.

IMPORTS

Wood Pulp

Reports generally agree that the market for imported wood pulp is quiet. There is a certain degree of interest manifest by some consuming buyers but it is principally of casual character, and not a great deal of actual demand is materializing. Paper manufacturers in a large majority of cases seem to have their requirements covered for a time and to be somewhat hesitant about purchasing farther ahead while facing so much uncertainty in their own markets.

However, there is a steady and fairly sizable movement of pulp against contracts and back orders, and pulp importers and agents in New York report also that papermakers in certain instances are absorbing supplies freely of those mill brands of pulp which they are accustomed to using regularly, and which they apparently feel sure they will need in the months to come. Moreover, the market is possessed of a fairly firm undertone, and there are some bullish aspects to the situation. Producers in Europe are adhering steadfastly to their agreement to cut sulphite output 15 per cent, which means that the production of such pulp is being curtailed appreciably. Also, a mill strike in Norway has brought pulp production in that country practically to a standstill, and in some instances shipments of stocks on hand are being held up from that Scandinavian source. Further, it is reported that surplus stocks of foreign pulp at American Atlantic ports are being gradually reduced, thus giving the market a stronger technical position.

An easy undertone marks prices of bleached sulphite; otherwise a steady tone prevails throughout the list of grades of imported pulp, with sellers said to be frequently turning down bids which fail to measure up to their ideas of ruling market prices. Prime bleached sulphite is reported available at 2.65 cents a pound ex dock Atlantic seaboard, although of course far above this price level is quoted on high-grade sulphite. Strong unbleached sulphite is selling at 2.10 cents upwards per pound ex dock American Atlantic ports, easy bleaching sulphite of prime quality at 2.30 to 2.50 cents, and ordinary Mitscherlich unbleached sulphite at 2.10 to 2.25 cents. Prime kraft remains on a price range of 1.50 to 1.75 cents a pound, with the low figure usually applying to boardmaking grades. Foreign groundwood is quoted at $26 per ton for dry pulp ex dock Atlantic seaboard.

Importations of chemical wood pulp into the United States in February amounted to 100,921 long tons, of a declared value of $4,785,302, according to official statistics issued by the U. S. Department of Commerce, registering a considerable decrease as compared with 149,809 long tons of a value of $7,148,728 imported in the preceding month, and a larger decline contrasted with 159,645 tons of a value of $8,811,936 in the corresponding month last year. Imports of bleached sulphite in February were 22,850 long tons, valued at $1,437,542, against 32,142 tons of a value of $2,330,420 in the same month of 1930; imports of unbleached sulphite were 44,885 tons, valued at $1,913,919, against 76,038 tons of a value of $3,937,747 a year ago, and imports of unbleached sulphate or kraft pulp were 31,218 tons, valued at $1,276,588, compared with 50,100 tons of a value of $2,435,768 a year ago in the same month. Groundwood imports in February totaled 13,979 long tons, valued at $380,338, contrasted with 12,852 tons of a value of $340,620 in the preceding month, and 34,915 tons of a value of $966,169 in February, 1930.

Current market quotations ex dock New York, and receipts at the port of New York during April, 1931, these data being taken from manifests of vessels reaching that port last month, follow:

Bleached sulphite, No. 1	2.65– 4.25
Unbleached sulphite, strong No. 1	2.10– 2.30
Unbleached sulphite, No. 2	1.90– 2.10
Easy bleaching sulphite	2.30– 2.50
Mitscherlich, unbleached, genuine	2.60– 2.80
Mitscherlich, unbleached, ordinary	2.10– 2.25
Kraft, standard Swedish	1.50– 1.75
Groundwood, per ton (dry)	26.00–28.00

Castle & Overton, 4,669 bls. from Hamburg and 171 Rotterdam; Lagerloef Trading Co., 5,709 bls. from Hango; M. Gottesman & Co., 3,960 bls. from Sibenik, 2,100 Stockholm, 750 Gothenburg and 275 Rotterdam; A. P. W. Paper Co., 2,084 tons and 10,264 bls. groundwood from Sheet Harbor, N. S.; E. M. Sergeant Co., 504 bls. from Oslo and 1,298 Gothenburg; Johaneson, Wales & Sparre, 5 bls. from Gothenburg; Guaranty Trust Co., 1,114 bls. from Gothenburg; Price & Pierce, 125 bls. from Gothenburg; Bulkley, Dunton & Co., 1,000 bls. from Stockholm; Brown Bros. & Co., 472 bls. from Hamburg; Atterbury Bros., 250 bls. from Oslo; E. J. Keller Co., 1,060 bls. from Hamburg; Order, 1,934 bls. from Hamburg and 450 Stockholm.

Paper Stock

Imports of papermaking materials into the United States continue to drop, February receipts, according to official figures issued by the U. S. Department of Commerce, totaling only 5,606,687 pounds of papermaking rags, valued at $69,354, compared with 26,630,269 pounds of a value of $511,797 in the same month a year ago, and 11,138,611 pounds of all other paper stock excepting wood pulp, of a value of

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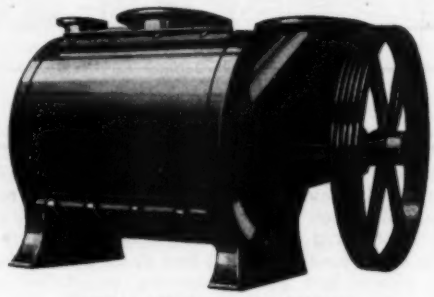

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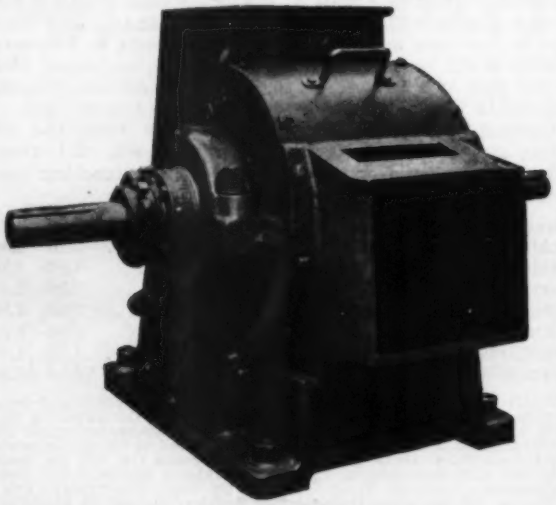

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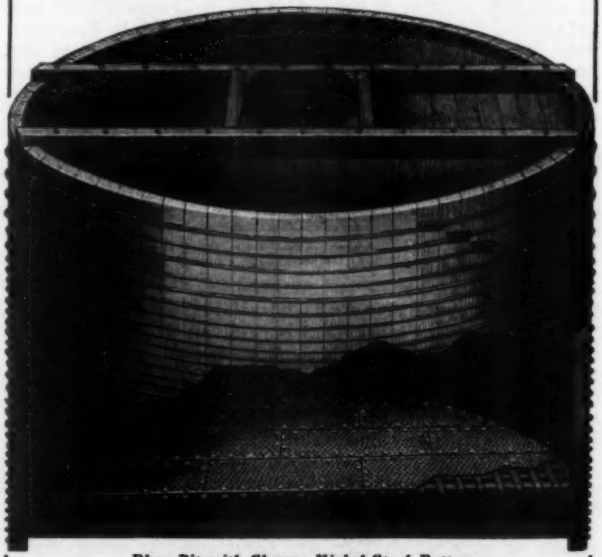

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$131,245, against 18,859,481 pounds of a value of $312,031 in February, 1930.

Arrivals during the month of April also were on the short side, judging from imports through the port of New York last month. Receipts at that port in April, these data being taken from manifests of steamers reaching New York during the month and therefore unofficial, were as follows:

Old Rope—International Purchasing Co., 161 coils; Brown Bros. & Co., 733 coils and 40 bls.; International Trust Co., 39 bls.; Chemical Bank & Trust Co., 33 coils and 58 bls.; Irving Trust Co., 63 bls. and 49 rolls; Anglo-South American Trust Co., 64 coils; United Fruit Co., 3 bls.; Order, 352 coils and 52 bls.

Old Bagging—E. Butterworth & Co., 131 bls.; Banca Commerciale Italiana Trust Co., 782 bls.; Darmstadt, Scott & Courtney, 194 bls.; Irving Trust Co., 312 bls.; Castel & Overton, 233 bls.; Bank of New York & Trust Co., 232 bls.; Kidder Peabody Acceptance Corp., 45 bls.; Bush Service Corp., 75 bls.; E. J. Keller Co., 190 bls.; Order, 438 bls.

Rags—E. J. Keller Co., 228 bls.; Leshner Corp., 8 bls.; Castle & Overton, 64 bls.; Daniel M. Hicks, Inc., 34 bls.; Victor Galaup, Inc., 473 bls.; Katzenstein & Keene, 652 bls.; J. Cohen & Son, 126 bls.; G. Schuster & Co., 17 bls.; J. Reiss & Co., 17 bls.; Ognazio Abela, 80 bls.; Arkus, Inc., 45 bls.; Harmon G. Lichtenstein, 85 bls.; R. Canoval & Sons, 104 bls.; Paul Berlowitz, 164 bls.; S. Birkenstein & Sons, 72 bls.; C. Nelson, 32 bls.; Ernst Mayer, 45 bls.; Chemical Bank & Trust Co., 182 bls.; International Acceptance Bank, 269 bls.; Marine Midland Trust Co., 407 bls.; Guaranty Trust Co., 576 bls.; Irving Trust Co., 63 bls.; Liberty National Bank, 64 bls.; Banca Commerciale Italiana Trust Co., 17 bls.; Amtorg Trading Co., 3,848 bls.; Baring Bros. & Co., 229 bls.; Erie Railroad Co., 19 bls.; J. A. Medina & Co., 160 bls.; Order, 609 bls.

Miscellaneous Paper Stock—William Steck & Co., 58 bls.; Daniel M. Hicks, Inc., 93 bls.; E. Butterworth & Co., 51 bls.; S. Birkenstein & Sons, 126 bls.; Ralli Bros., 68 bls.; Atlantic Navigation Corp., 16 bls.; Castle & Overton, 87 bls.; W. T. Mali & Co., 59 bls.; International Trust Co., 118 bls.; T. D. Downing & Co., 70 bls.; F. Lalande, 67 bls.; Milton Snedeker Corp., 139 bls.; E. J. Keller Co., 105 bls.

Paper

Imports of paper into the United States in February reached a total value of $9,871,476, showing a decrease as compared with importations of a value of $10,784,264 in the preceding month, and also as contrasted with imports valued at $10,367,617 in the corresponding month last year, according to official statistics compiled by the U. S. Department of Commerce. February imports comprised chiefly, of course, newsprint paper, receipts of which were valued at $8,423,765, compared with $8,925,175 in the preceding month. Total imports of paper in the first two months of the current year were valued at $20,791,086, against $23,717,761 in the similar period a year ago.

Paper imports last month continued comparatively small, taking the receipts through the port of New York as a criterion. Arrivals of all kinds of paper at that port during April, these data being taken from manifests of arriving vessels and therefore unofficial, were as follows:

Printing—C. A. Redden, 26 rolls from Dundee; Lunham & Reeve, 921 reels from Hango and 168 rolls and 80 bls. Gothenburg; E. Dietzgen & Co., 176 cs. from Rotterdam and 21 cs. Hamburg; Perkins-Goodwin Co., 1,358 reels from Hamburg and 216 reels Bremen; Oxford University Press, 24 cs. from Liverpool; P. C. Zuhlke, 2 cs. from Bremen; Jay Madden Corp., 723 reels from Hango and 105 reels Hamburg; Stora Kopparberg Corp., 108 reels from Gothenburg; Walker Goulard Plehn Co., 16 bls. from Gothenburg; W. H. Bell, 12,287 rolls from Liverpool, N. S.; Guaranty Trust Co., 55 bls. from Hamburg; C. Steiner, 39 cs. from Bremen; Keuffel & Esser Co., 40 cs. and 63 rolls from Hamburg and 12 cs. Rotterdam; Baldwin Paper Co., 456 reels from Hamburg; Order, 1,734 reels, 36 bls. and 27 cs. from Bremen, 1,583 reels and 20 cs. from Hamburg, and 445 reels from Hango.

Wrapping—Atlantic Forwarding Co., 14 cs. from Hamburg; E. Dietzgen & Co., 28 cs. from Rotterdam; Borregaard Co., 1,938 reels and 83 bls. from Gothenburg; A. Johnson, 22 reels from Gothenburg; J. P. Heffernan Paper Co., 119 bls. from Antwerp; Standard Products Corp., 4 rolls and 13 cs. from Antwerp; Robert Wilson Paper Corp., 10 cs. from Glasgow; C. Steiner, 105 bls. from Rotterdam; Order, 12 cs. from Rotterdam.

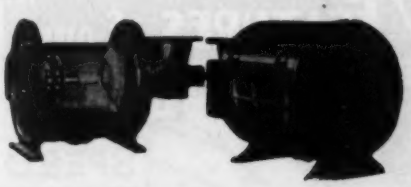
Cigarette—Brown & Williamson Tobacco Corp., 13 cs. from Havre and 30 cs. Southampton; P. J. Schweitzer, Inc., 37 cs. from Marseilles and 41 cs. Havre; M. Spiegel & Sons, 18 bls. from Genoa, 16 cs. Hamburg and 18 bls. Naples; Chase National Bank, 8 cs. from Hamburg; Champagne Paper Corp., 584 cs. from Havre; Standard Products Corp., 375 cs. from Havre; American Express Co., 2 cs. from Copenhagen; American Tobacco Co., 1,900 cs. from Bordeaux; Ivars & Cassain, 5 cs. from Alicanta; DeMaudult Paper Corp., 1,226 cs. from St. Nazaire and 521 cs. Havre; Order, 2 cs. from Havre.

Writing—Distinctive Writing Paper Co., 7 cs. from Havre; Guibont Freres & Co., 7 cs. from Havre and 6 cs. Southampton; John Wanamaker, 4 cs. from Hamburg; Order, 18 cs. from Havre.

Filter—E. Fougera & Co., 137 cs. from Southampton; H. Reeve Angel & Co., 64 cs. from London and 141 bls. Southampton; A. Giese & Son, 20 bls. from Hamburg, 32 bls. Southampton and 3 bls. Bordeaux; C. Sleicher & Scholl Co., 20 cs. from Hamburg; Gerhard & Hey, 53 bls. from Southampton; American Express Co., 30 bls. from Bordeaux.

Tissue—F. C. Strype, 9 cs. from Genoa; B. F. Drakenfeld & Co., 5 cs. from Liverpool; W. J. Byrnes & Co., 5 cs. from Southampton; W. H. Proctor, 2 cs. from Liverpool.

Drawing—H. Reeve Angel & Co., 8 cs. from London; Keuffel &



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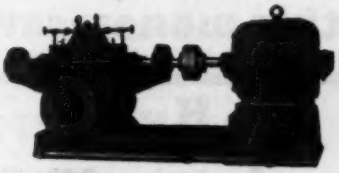

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Hanging—F. J. Emmerich & Co., 21 bls. from Hamburg and 6 bls. Liverpool; A. C. Dodman, Jr., Inc., 12 bls. from Liverpool; G. W. Sheldon & Co., 2 pkgs. from Southampton; F. A. Binder, 22 bls. from Hamburg; M. J. Corbett & Co., 5 pkgs. from Bremen; Irving Trust Co., 66 cs. from Hamburg; Guaranty Trust Co., 18 cs. from Hamburg; R. F. Downing & Co., 3 cs. from Yokohama, 19 cs. Southampton, 2 bls. London and 12 bls. Kobe; F. G. Prager Co., 20 bls. from Antwerp; Bush Service Corp., 6 bls. from London; J. E. Bernard & Co., 3 bls. from London, 13 bls. Southampton, 4 bls. Liverpool and 8 cs. Gothenburg; Wessel, Duval & Co., 11 bls. from Hamburg; Order, 5 pkgs. from Liverpool and 25 bls. Hamburg.

Board—Johaneson, Wales & Sparre, 509 reels from Bremen and 15 bls. Hango; American Express Co., 240 cs. from Hamburg; Chase National Bank, 195 rolls from Rotterdam; Central Hanover Bank & Trust Co., 146 rolls from Rotterdam; Progressive Fiber Specialty Co., 28 bls. from Gothenburg; H. Fuchs & Son, 112 bls. from Gothenburg; Robert Wilson Paper Corp., 168 rolls from Rotterdam; C. H. Powell & Co., 63 reels from Rotterdam; Lagerloef Trading Co., 35 reels and 59 bls. from Hango; Order, 43 bls. from Hamburg and 8 cs. Antwerp.

Miscellaneous—Hensel, Bruckman & Lorbacher, 67 cs. from Hamburg and 12 cs. Bremen; P. C. Kuyper & Co., 4 cs. from Hamburg; F. B. Vandegrift & Co., 2 cs. from Hamburg; American Indicator Paper Co., 2 cs. from Kobe; Steffens, Jones & Co., 2 cs. from Kobe; B. F. Drakenfeld & Co., 21 cs. from Liverpool; S. Gilbert, 14 cs. from Bremen; George LaMonte & Son, 4 cs. from Cristobal; Heemsoth & Basse, 15 bls. from Rotterdam; Steiner Paper Corp., 19 cs. from Rotterdam; M. W. Bersch, 9 cs. from Hamburg; Japan Paper Co., 2 cs. from Gothenburg, 15 cs. Havre and 50 cs. Kobe; H. Fuchs & Son, 7 cs. from Rotterdam; Holland-American Line, 80 reels from Rotterdam; Keller-Dorian Paper Co., 11 cs. from Havre; F. Murray Hill, Inc., 10 cs. from Bremen; S. Beinfang, 7 cs. from Bremen; Davies, Turner & Co., 3 cs. from Hamburg; G. A. Vedovi & Co., 6 cs. from Genoa; P. H. Petry & Co., 4 cs. from Havre; A. Flinn & Co., 6 cs. from Havre; P. Puttmann, 3 cs. from Havre; Northern Merchandise Co., 15 cs. from Hong Kong; Hurley-Johnson Corp., 3 bls. from Liverpool; Corn Exchange Bank, 11 cs. from Kobe; S. F. Berliner, 5 cs. from Kobe; E. Daiber, 3 cs. from Antwerp; Kaplan Bros., 7 cs. from Bremen; D. F. Young, 27 cs. from Bremen; J. Beckhardt & Co., 25 cs. from Bremen and 17 cs. Rotterdam; Henschel, Naeve & Co., 29 cs. from Bremen; F. L. Kraemer & Co., 21 cs. from Hamburg, 2 cs. Southampton and 124 bls. Gothenburg; Bank of America, 11 cs. from Hamburg; Whiting-Patterson Co., 9 bls. from Southampton; W. L. Newberry, 2 cs. from Hamburg; Robert Wilson Paper Corp., 13 bls. from Rotterdam; F. C. Strype, 16 reels from Rotterdam; Westchester Paper Co., 7 bls. from Gothenburg; E. Hennigson, 3 bls. from Bremen; Johaneson, Wales & Sparre, 13 cs. from Genoa; Yardley & Co., 5 cs. from London; International Mercantile Marine Co., 6 cs. from Antwerp; International Forwarding Co., 7 cs. from Hamburg and 16 cs. Antwerp; Independent Forwarding Co., 13 cs. from Bremen; National Freight Forwarding Co., 6 cs. from Hamburg; Phoenix Shipping Co., 15 cs. from Bremen; Hudson Forwarding Co., 4 cs. from Havre; Globe Shipping Co., 215 cs. from Bremen, 4 bls. Hamburg and 25 cs. Rotterdam; American Express Co., 50 cs. from Bremen.

Foster Wheeler Enters Boiler Industry

The Foster Wheeler Corporation, New York City, announces that through the acquisition of the plant and business of the D. Connelly Boiler Co., Cleveland, Ohio, it has entered the boiler manufacturing field and is prepared to furnish all types in the entire range of sizes and pressures. The Connelly Company has been a progressive builder of boilers for more than 50 years.

The Foster Wheeler Corporation has been supplying complete steam generators for sometime, and has produced the various parts in its own works, with the exception of the boiler proper. The combination of an old established boiler shop with the present Foster Wheeler plants and engineering aggressiveness will be of special interest in the industry.

The units to be produced include: forged steel, sectional header cross drum boilers; four drum and three drum bent tube boilers; three drum "low head" bent tube and two drum bent tube boilers. For marine service there will be offered, as in the past, cross drum steam generators of both box header and sectional header designs; three drum "A" type and two drum low head units.

With the addition of the boiler to its products, the Corporation can now undertake single contracts with undivided responsibility as to design, construction and operation for complete steam generators including pulverized fuel equipment, water cooled furnaces, superheaters, economizers and air heaters.

The possession of a boiler shop fully equipped for heavy work has the further advantage of enabling Foster Wheeler to meet all of its requirements for heater and evaporator shells as well as for fractionating and stabilizer towers, used extensively in its petroleum refining and gasoline recovery plants.

A typical installation of Norwood Gravity Filters in a Paper Mill

A CURE for
Spring water troubles

A SURE cure for Spring water troubles—freshets and high water with dirt and debris—has been found by the hundreds of paper mills who have installed modern Norwood Filters.

Norwood Filters will help you keep your plant running on an even schedule and eliminate partial shut downs due to unusable water.

High water, low water and dirty water periods hold no worries for the mills equipped with Norwood Filters, for they know that all dirt and other foreign matter will be perfectly filtered out. Only clean water enters into the making of the paper, resulting in uniform quality. Machines are not plugged or damaged—continuous operation is possible.

Norwood Water Filters have many advantages and exclusive features. Investigate them now!

Just Off the Press

Norwood's New Pressure Filter Catalog. A copy is yours for the asking.

NORWOOD ENGINEERING CO.

16 No. Maple St., Florence, Mass.

FITCHBURG DUCK MILLS

ESTABLISHED 1844

414 Duck Mill Road, FITCHBURG, MASS.

Manufacturers of

TRIUNE and MULTIPLE PLY

CANVAS DRYER FELTS

← { OUR NEW 300-INCH LOOM WHICH IS MAKING A DRYER FELT 288 INCHES IN WIDTH }

Fine Faced "English Woven" Felts for Fine Papers in Three, Four, Five and Six Ply 60 inches to 288 Inches in Width.

ABSOLUTELY NO FELT MARKS IN PAPER

TRIUNE Three Ply Felts for extra long service and large production

Tenax Felts

They Satisfy!

Satisfied Users – – A Legion

The Felt of Today and Tomorrow: TENAX

TENAX In All Styles for All Purposes.

Non-Users Are the Losers

Tenax Felts

Made Only by

LOCKPORT FELT COMPANY

NEWFANE, N. Y.

Foreign Trade Opportunities

The following foreign trade opportunities are issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce. Those interested are requested to communicate with the Bureau at its offices in Washington or New York or its branch offices in other cities, in every case mentioning the number of the inquiries referred to.

No. 50634—Paper bags for cement and wheat flour. Bogota, Columbia. Agency desired.

No. 50638—Cigarette paper. Bombay, India. Purchase desired.

No. 50637—Cover stock, black, for calendar mounts and picture mounts. Edmonton, Canada. Purchase desired.

No. 50635—Drinking cups of paraffined paper for hotels, restaurants and offices. Santo Domingo, Dominican Republic. Sole agency desired.

No. 50696—Milk bottle and paper cup making and printing equipment. Montevideo, Uruguay. Purchase desired.

No. 50686—Wallpaper, complete line. Shanghai, China. Purchase and agency desired.

No. 50675—Paper and pulp mill machinery, and paper machine felts. Helsingfors, Finland. Agency desired.

No. 50780—Paper shopping bags. Cork, Ireland. Purchase desired.

No. 50782—Corrugated box factory equipment. Edmonton, Canada. Purchase desired.

No. 50779—Jars and spoons of pasteboard. Rosario, Argentina. Purchase and agency desired.

No. 50783—Spoons and forks of cardboard. Hamburg, Germany. Agency desired.

No. 50815—Vulcanized fiber in sheets. Balingen, Germany. Purchase desired.

No. 50718—Wallboard, composition. Caracas, Venezuela. Agency desired.

No. 50798—Writing paper. Amritsar, India. Agency desired.

No. 50773—Sulphite pulp and papermaking machinery, using sawmill waste. Winnipeg, Canada. Purchase desired.

No. 50970—Cellulose sheeting, transparent, Kovno, Lithuania. Agency desired.

No. 50972—Insulating board for sound theatre. Singapore, Straits Settlements. Agency desired.

No. 51140—Kraft paper. Osaka, Japan. Purchase and agency desired.

No. 51152—Lace paper doilies and cups used by bakeries. Toronto, Canada. Purchase and agency desired.

No. 51141—Milk bottle caps. San Juan, Porto Rico. Agency desired.

No. 51070—Fiber board, wood. Copenhagen, Denmark. Purchase desired.

Toledo Scale Announces Price Reduction

The Toledo Scale Co., Toledo, O., has just announced many improvements in all scale models, as well as a reduction in the prices of retail, industrial, parcel post and person weigher scales.

A three-year standardization program, whereby the number of manufactured scale parts was greatly reduced, has just been completed by this company. The savings resulting from this program have been devoted to improving the quality of Toledo scales.

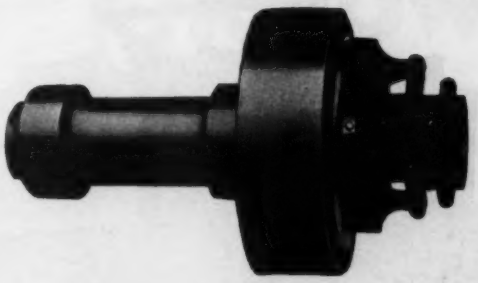
This price reduction was made possible by the designing and employing of new machinery to improve production methods and cut manufacturing costs, and through a general decline in commodity prices.

Marvin Appointed Hercules Advertising Manager

Theodore Marvin has been appointed advertising manager of Hercules Powder Company, Wilmington, Delaware. He was formerly assistant advertising manager and editor of the Explosives Engineer magazine published by the Hercules Powder Company and is the author of handbooks on mining and tunnel methods.

Mr. Marvin assumes the post vacated April 5 by the death of Nelson Greensfelder.

Here's the Clutch



Specify the

WOOD'S

BALL BEARING

FRICTION CLUTCH

for High Speed and Continuous Operation

There's no mechanical assignment too severe for the Peerless Friction Clutch with Ball Bearing Sleeve. Made for the most intensive service, it assures dependable control and positive action on high speed and continuous operations—indefinitely.

Seventy-four years of clutch making experience is apparent in Peerless Friction Clutches—in their simplicity of design and ease of operation. They are absolutely safe—cannot "kick-out" when engaged or "pick-up" when disengaged. Their installation is an economical measure for machine maker and machine user, eliminating replacements, preventing breakdowns, and minimizing power costs on every operation.

Recommendations and estimates gladly submitted on receipt of specifications. Or catalogs, if preferred.

T. B. Wood's Sons Co.

Chambersburg, Pa.

New England Branch: **Cambridge, Mass.**

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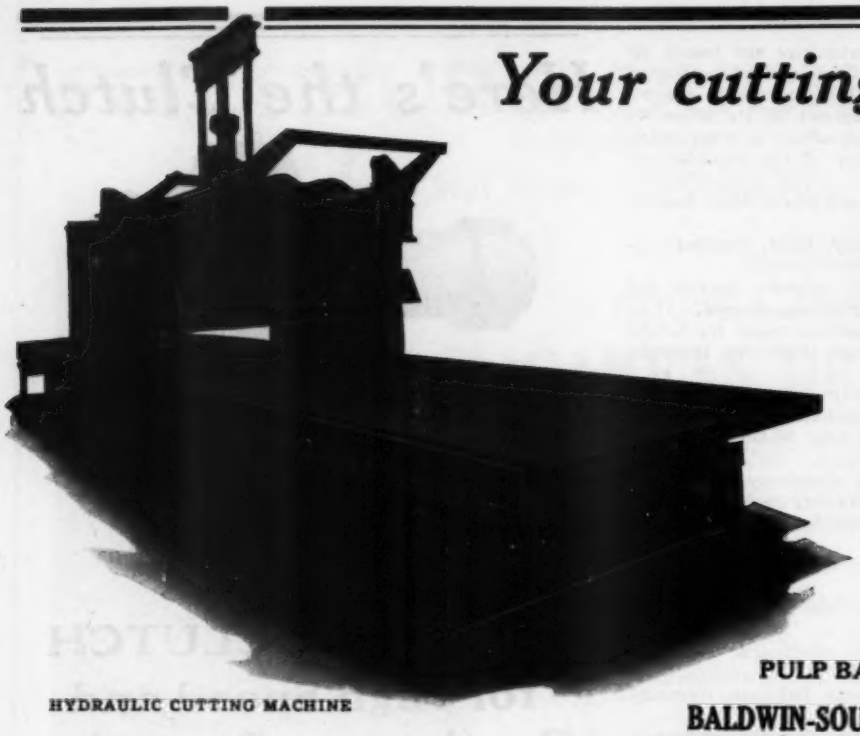
Makers of:

Shafting, Hangers, Collars, Pulleys, Friction Clutches, Ball Bearings, Flexible Couplings, Rope Sheaves, Pillow Blocks, The U. G. Automatic Belt Contactor and Texrope Drives. Also Brass, Aluminum and Gray Iron Castings.



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Your cutting or baling problem

Hydraulic cutting or baling equipment, incorporating the latest features of design, for rapid production and handling of paper and pulp products is a Southwark specialty.

Our engineering staff will gladly cooperate with your production department in reducing your product costs with Southwark time-saving equipment. No obligation .... get in touch with our nearest sales office.

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AKRON UNITED BLDG. **PHILADELPHIA** CHICAGO FISHER BLDG.

YES he's knocked out by falling pulp !!

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The National Safety News, an eighty-page magazine, will be sent to you each month. You will find its articles practical—inspiring—of real service.

In addition, you will be privileged to call upon the Council's staff of trained Safety engineers, editors, and librarians for information and advice on your accident prevention problems. At your disposal is the Council Library—the most comprehensive collection of safety knowledge in existence.

Investigate the services of the National Safety Council—only partly covered in the foregoing paragraphs. Kimberly Clark, Long Bell Lumber Company, and hundreds of other small and large companies use it profitably. Why not you? Return the coupon for full information.

R. B. Wolf Returns to the Manufacturing Field

Robert B. Wolf, formerly president of the Pulp Bleaching Corporation, New York, who is widely known throughout the industry for his many important contributions to the science of pulp manufacture, has recently made a connection with the Weyerhaeuser Timber Company, Tacoma, Wash., and given up the management of the Pulp Bleaching Corporation.

The Weyerhaeuser interests have now under construction at Longview, Wash., a sulphite pulp mill with an initial capacity of 150 tons of bleached sulphite fiber a day, of which Mr. Wolf will be the manager, and under whose direction the output of the mill will be marketed to the trade. What this means will be appreciated by all who are familiar with the pioneer work done by Mr. Wolf in the scientific control of pulp manufacture and the development of bleaching methods, which gave to one of the companies with which he was connected a preeminent position as producers of bleached pulp.

Mr. Wolf's connection with the pulp and paper industry extends over 35 years. He was graduated from Delaware College with a degree in electrical engineering and later became an M.E. He entered paper mill work almost immediately, being connected with different mills in New York State and New England. For a time he was superintendent of the Piercefield, N. Y., sulphite mill of the International Paper Company, and was later connected with the Union Bag & Paper Company, having been appointed to supervise the design and construction of their pulp mill at Hudson Falls, N. Y. When the plant was ready for operation he was chosen superintendent, and held this position until 1906, when he became associated with the Burgess Sulphite Fibre Company (now the Brown Company), of Berlin, N. H. His record with this company is well-known. As manager of the Berlin plant he inaugurated a system of recording operations, which was the subject of numerous papers and discussions at meetings of the Technical Association of the Pulp and Paper Industry. He is credited with the distinction of having been able to expand production while at the same time improving the quality of the product.

Mr. Wolf's subsequent connection with the Spanish River Pulp & Paper Mills, at Sault Ste. Marie, Ont., was interrupted by the entrance of the United States into the great war. Mr. Wolf was appointed to serve on the staff of the United States Emergency Fleet Corporation, and shortly after the close of the war he returned to the pulp and paper industry, organizing the engineering firm known as Wolf & Hill. The Pulp Bleaching Corporation was incorporated in 1925.

Throughout his industrial career Mr. Wolf has been intensely interested in the human side of management problems and has made a number of contributions to both technical and philosophical literature. His return to an executive position in the manufacturing field will be welcomed by his many friends and associates.

Twelfth N.A.C.A. Conference

The program for the Twelth International Cost Conference of the National Association of Cost Accountants to be held in Pittsburgh, Pa., June 15 to 18, provides a very unique presentation as a background for the sessions.

The technical sessions of this conference will examine the past methods of an actual business, the results of which will be reflected in reports presented at the opening session. The remainder of the sessions will develop the most modern ideas of management for the salvation of this business. Although a thorough study of a single business, this method will develop ideas applicable to any business.

The audience will act as a board of directors of the N. A. C. A. Manufacturing Co. to learn what progress has been made by the officers of this company in reorganizing its affairs and to determine whether the proposals that are to be laid before the meeting will justify continuation of the business.

James F. Walsh, formerly vice-president and technical director of Celluloid Corporation, has joined the consulting staff of Arthur D. Little, Inc., of Cambridge, Mass.

DO YOU KNOW!

Or Are You Taking It For Granted

that the felts you are now replacing on your machine every few days are the very best felts for your particular requirement?

Satisfactory water removal is important, 'tis true . . . but not the whole of the story. Are your present felts showing the wearing qualities you have the right to expect? That also is important.

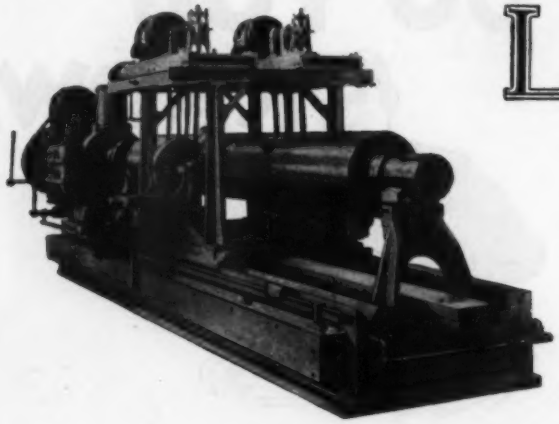
It would pay you to check up by switching over to Orrs for a spell. Mills that try this method of checking up usually learn something about the relative merits of various brands that stands them in good stead ever after.

Orrs are also unexcelled for their water-removing qualities.

Consult the nearest Orr representative.

The Orr Felt & Blanket Co.
Piqua, Ohio

ORR FELTS



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Direct connected, completely enclosed, geared driving head.

Automatic lubrication throughout including Vs and feed screw.

Complete protection of collector-wires, feed screw and all moving parts.

The automatic crowning device and the provision for leveling the bed, exclusive features of LOBDELL grinders, retained and improved

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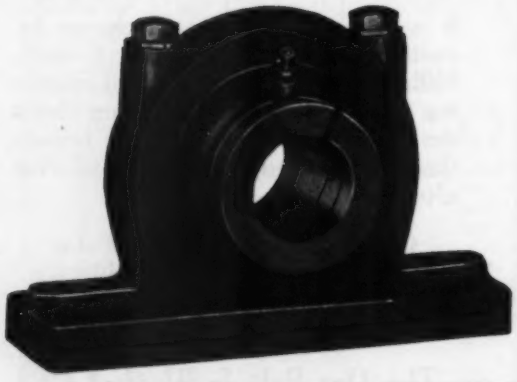

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